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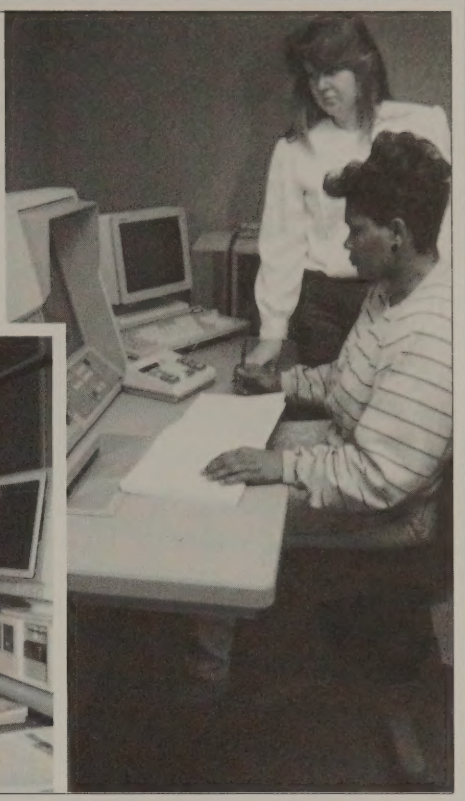

SURVEY METHODS AND STATISTICAL SUMMARY OF NONFUEL MINERALS

By Jacqueline A. McClaskey and Stephen D. Smith

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COVER PHOTO:
The U.S. Bureau of Mines collects mineral data from many sources. After processing and analysis, the final results are published as annual reports and in the "Minerals Yearbook." The U.S. Bureau of Mines moved into its new headquarters building in November 1991.

For comments or further information, please contact

The Division of Statistics and Information Services
U.S. Bureau of Mines
810 7th St., NW, MS 5242
Washington, DC 20241
Telephone: (202) 501-9477

SURVEY METHODS AND STATISTICAL SUMMARY OF NONFUEL MINERALS

By Jacqueline A. McClaskey and Stephen D. Smith

Ms. McClaskey, an operations research analyst with 6 years of Government experience, has been with the U.S. Bureau of Mines Branch of Statistics and Methods Development since 1990.

Mr. Smith, industry data analyst in the Section of Industry Data Analysis and Coordination, was assisted in the preparation of the Statistical Summary by Imogene P. Bynum, Chief, Section of Metals Data; Rosa McGee, Chief, Section of Industrial Minerals Data; William L. Zajac, Chief, Section of International Data; and Jim F. Lemons, Jr., Chief, Branch of Materials.

SURVEY METHODS

The U.S. Bureau of Mines Information and Analysis Directorate collects worldwide data on virtually every commercially important nonfuel mineral commodity. These data form the base for tracking and assessing the health of the minerals sector of the U.S. economy.

The Bureau's data collection activity was instituted by the 47th Congress in an appropriations act of August 7, 1882 (22 Stat. 329), which placed the collection of mineral statistics on an annual basis. The most recent authority for the U.S. Bureau of Mines survey activity is the National Materials and Minerals Policy, Research and Development Act of 1980 (Public Law 96-479, 96th Congress). This act strengthens protection for proprietary data provided to the U.S. Department of the Interior by persons or firms engaged in any phase of mineral or mineral-material production or consumption.

Data Collection Surveys

The Bureau begins the collection of domestic nonfuel minerals and materials statistics by appraising the information requirements of Government and private organizations of the United States. Requirements that can be met by collecting data from minerals establishments are posed as questions on U.S. Bureau of Mines surveys. Figure 1 shows a typical survey form.

Specific questions about the production, consumption, shipments, etc., of mineral commodities are structured in the survey forms to provide meaningful aggregated data. Thus, the entire mineral economic cycle from production through consumption is covered by 167 monthly, quarterly, semiannual, annual, and biennial surveys.

After the survey form has been designed, a list of the appropriate establishments to be canvassed is developed. Many sources are used to determine which companies, mines, plants, and other operations should be included on the survey mailing list. Bureau of Mines State Mineral Officers, State geologists, Federal organizations (e.g., Mine Safety and Health Administration), trade associations, industry representatives, and trade publications and directories are some of the sources that are used to develop and update survey listings. With few exceptions, a complete canvass of the list of establishments is employed rather than a sample survey. The iron and steel scrap industry is one of the exceptions where a sample survey is conducted.

The Paperwork Reduction Act requires that any Government agency wishing to collect information from 10 or more people first obtain approval from the Office of Management and Budget (OMB). OMB approves the need to collect the data and protects industry from unwarranted Government paperwork. *(See figure 1.)*

Survey Processing

The Bureau surveys approximately 25,500 establishments. Each year the Bureau mails about 50,000 forms that gather information for 167 different surveys. Each completed survey form returned to the Bureau undergoes extensive scrutiny to ensure the highest possible accuracy of the mineral data. The statistical staff monitors all surveys to ensure that errors are not created by reporting in physical units different from the units requested on the form. Relationships between related measures, such as produced crude ore and marketable crude ore, are analyzed for consistency. Engineering relationships, such as recovery factors from ores and concentrates, are also employed. The totals for each form are verified, and currently reported data are checked against prior reports to detect possible errors or omissions.

For the majority of the surveys, which are automated, the forms are reviewed to ensure that data are complete and correct before entering into the computer. The computer is programmed to conduct a series of automated checks to verify mathematical consistency and to identify discrepancies between the data reported and logically acceptable responses.

The U.S. Bureau of Mines is modernizing and automating all of its survey processing and data dissemination functions. Automated commodity data system functions include computerized preparation of statistical tables; the use of

desktop publishing to integrate text and tables; and the implementation of a microcomputer bulletin board, known as MINES-DATA, for electronic dissemination of minerals data.

Survey Responses.—To enable the reader to better understand the basis on which the statistics are calculated, each commodity annual report includes a section entitled "Domestic Data Coverage." This section briefly describes the data sources, the number of establishments surveyed, the response percentage, and the method of estimating the production or consumption for nonrespondents.

To produce reliable aggregated data, the Bureau employs efficient procedures for handling instances of nonresponse. Failure to return the initial survey form results in a second mailing of the form. If the second form is not returned, telephone calls are made to the nonrespondents. The followup calls provide the necessary data to complete the survey forms and/or verify questionable data entries. Periodic visits to important minerals establishments are also made by Bureau commodity specialists or State Mineral Officers to gather missing data and to explain the importance of the establishment's reporting. By describing the use of the published statistics and showing the impact of nonresponse, the Bureau strives to encourage respondents to give a complete and accurate reply.

The OMB "Guidelines for Reducing Reporting Burden" stipulates that the minimum acceptable response rate shall be 75% of the panel surveyed. In addition, the Bureau strives for a minimum reporting level of 75% of the quantity produced or consumed (depending on the survey) for certain key statistics. Response rates are periodically reviewed. For those surveys not meeting the minimum reporting level, procedures are developed and implemented to improve response rates.

Estimation for Nonresponse.—When efforts to obtain a response to a survey fail, it becomes necessary to employ estimation or imputation techniques to account for missing data. These techniques are most effective when the response rate is relatively high. Some of the estimation methods depend on knowledge of prior establishment reporting, while other techniques rely on external information to estimate the missing data. When survey forms are received after the current publication has been completed, the forms are edited, necessary imputations are made for missing data, and the survey data base is updated. The revised data are reported in later publications.

Protection of Proprietary Data.—The U.S. Bureau of Mines relies on the cooperation of the U.S. minerals industry to provide the mineral data that are presented in this and other Bureau publications. Without a strong response to survey requests, the Bureau would not be able to present reliable statistics. The Bureau in turn respects the proprietary nature of the data received from the individual companies and establishments. To ensure that proprietary rights will not be violated, the Bureau analyzes each of the aggregated statistics to determine if the data reported by an individual establishment can be deduced from the aggregated statistics. If, for example, there are only two significant producers of a commodity in a given State, the Bureau will not publish the State total because either producer could readily estimate the production of the other. It is this obligation to protect proprietary information that results in the "Withheld" or "W" entries in the published tables. However, if a company gives permission in writing, the Bureau will publish the data as long as the data from other producers are protected from disclosure.

International Data

International data are collected by country specialists in the U.S. Bureau of Mines Division of International Minerals with assistance from the Section of International Data. The data are gathered from various sources, including published reports of foreign Government mineral and statistical agencies, international organizations, the U.S. Department of State, the United Nations, the Organization of Petroleum Exporting Countries, and personal contact by specialists traveling abroad. Each February an annual "Minerals Questionnaire" is sent through the Department of State to more than 130 U.S. Embassies asking them to provide estimates of mineral production for the host country for the preceding year. Missing data are estimated by Bureau country specialists based on historical trends and specialists' knowledge of current production capabilities in each country.

Publications

The U.S. Bureau of Mines disseminates current and historical minerals information through a broad range of printed publications.

The Minerals Yearbook summarizes annually, on a calendar-year basis, the significant economic and technical developments in the mineral industries. Three separate volumes are issued each year: Volume I, Metals and Minerals; Volume II, Area Reports, Domestic; and Volume III, Area Reports, International. Chapters in these volumes are issued separately as annual reports before the bound volumes are available. (Volume III country reports appear in bound volume only.)

Volume I of the Minerals Yearbook presents, by mineral commodity, salient statistics on production, trade, consumption, reserves, and other measures of economic activity.

Volume II of the Minerals Yearbook reviews the U.S. minerals industry by State and island possessions.

Volume III of the Minerals Yearbook presents the latest available mineral statistics for more than 170 countries with a summary review of the role of minerals in the world economy.

Mineral Industry Surveys contain timely statistical and economic data on minerals. The surveys are designed to keep Government agencies and the public, particularly the mineral industry

and the business community, informed of trends in the production, distribution, inventories, and consumption of minerals. Frequency of issue depends on the demand for current data. Mineral Industry Surveys are released monthly, quarterly, semiannually, or annually.

Mineral Commodity Summaries, an up-to-date summary of about 90 nonfuel mineral commodities, is the earliest Government publication to furnish estimates covering the previous year's nonfuel mineral industry data. It contains information on the domestic industry structure, Government programs, tariffs, 5-year salient statistics, and a summary of international mining news.

State Mineral Summaries provide estimated data and summaries of mineral activities at the State level for the previous year. These summaries have been prepared in cooperation with State geological surveys or related agencies.

Minerals Today, published bimonthly, provides readers with the latest information about developments, trends, and issues concerning the mining, processing, and use of minerals and materials.

Metal Industry Indicators, published monthly, contains indexes that measure the current and future performance of four U.S. minerals industries. For each of the four industries, a composite coincident index and a composite leading index have been developed based on procedures and data similar to those used to construct the U.S. Department of Commerce's coincident and leading cyclical indicators for the national economy.

Information Circulars are primarily concerned with Bureau economic reviews and interpretative analyses. The series also includes surveys of mining and operating activities, guides to marketing of mineral commodities, and compilations of historical information and statistical and economic data on minerals.

To purchase Volumes I, II, and III of the Minerals Yearbook and Minerals Today, contact the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. For free copies of individual annual reports of the Minerals Yearbook, the Mineral Industry Surveys, the Mineral Commodity Summaries, the State Mineral Summaries, and Information Circulars, contact Publications Distribution, U.S. Bureau of Mines, Cochrans Mill Road, P.O. Box 18070, Pittsburgh, PA 15236. To receive a copy of the Metal Industry Indicators, contact the Branch of Statistics and Methods Development, U.S. Bureau of Mines, MS 9701, 810 7th Street, NW, Washington, DC 20241.

Electronic Data Dissemination

In addition to the Bureau's printed publications, current Mineral Industry Surveys for several commodities and selected annual reports from the Minerals Yearbook are now available through the Bureau's MINES-DATA computer bulletin board. Using this system, the public may obtain information up to 4 weeks before published copies of the reports would arrive in the mail. The MINES-DATA system may be accessed by calling (202) 501-0373 using a modem set to 1200 or 2400 baud, 8 data bits, no parity, and 1 stop bit. Further information on how to use the MINES-DATA system may be obtained from the system operator by calling (202) 501-0406.

STATISTICAL SUMMARY

This annual report summarizes data on crude nonfuel mineral production for the United States, its island possessions, and the Commonwealth of Puerto Rico. Also included are tables that show the principal nonfuel mineral commodities exported from and imported into the United States and that compare world and U.S. mineral production. The detailed data from which these tables were derived are contained in the individual annual reports of Volume I and in the State reports of Volume II of this edition of the Minerals Yearbook.

Although crude mineral production may be measured at any of several stages of extraction and processing, the stage of measurement used in this annual report is what is termed "mine output." It usually refers to minerals or ores in the form in which they are first extracted from the ground, but customarily includes the output from auxiliary processing at or near the mines.

Because of inadequacies in the statistics available, some series deviate from the foregoing definition. For copper, gold, lead, silver, tin, and zinc, the quantities are recorded on a mine basis (as the recoverable content of ore sold or treated). However, the values assigned to these quantities are based on the average selling price of refined metal, not the mine value. Mercury is measured as recovered metal and valued at the average New York price for the metal.

The weight or volume units shown are those customarily used in the particular industries producing the commodities. Values shown are in current dollars, with no adjustments made to compensate for changes in the purchasing power of the dollar.

TABLE 1

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
METALS							
Beryllium concentrates	metric tons	4,592	$5	4,548	e$5	4,339	$5
Copper[2]	do.	1,497,818	4,323,965	r1,587,742	r4,311,204	1,631,078	3,931,305
Gold[2]	kilograms	265,731	3,268,548	r294,527	r3,649,914	289,885	3,385,874
Iron ore (includes byproduct material)	thousand metric tons	58,299	1,839,873	57,010	1,740,925	56,775	1,674,100
Iron oxide pigments (crude)	metric tons	40,202	4,561	37,071	4,615	40,220	4,485
Lead[2]	do.	410,915	356,477	r483,704	r490,771	465,931	343,948
Magnesium metal	do.	152,066	508,668	139,333	433,119	131,288	336,577
Mercury	do.	W	W	W	W	58	206
Molybdenum[3]	do.	61,168	427,477	61,580	r348,256	53,607	249,909
Nickel ore[4]	do.	NA	NA	r330	NA	5,523	NA
Palladium metal[5]	kilograms	4,850	22,454	5,930	21,735	6,050	16,923
Platinum metal[5]	do.	1,430	23,310	1,810	r27,176	1,730	20,635
Silver[2]	metric tons	2,007	354,973	r2,125	r329,329	1,848	240,041
Zinc[2]	do.	275,883	499,103	515,355	847,485	517,804	602,426
Combined value of antimony, bauxite, manganiferous ore (5% to 35%), mercury, rare-earth metal concentrates, tin, titanium concentrates (ilmenite and rutile), tungsten, vanadium, zircon concentrates, and values indicated by symbol W		XX	233,783	XX	r237,468	XX	143,298
Total metals[6]		XX	r11,863,000	XX	r12,442,000	XX	10,950,000
INDUSTRIAL MINERALS (EXCLUDING FUELS)							
Abrasives[7]	metric tons	1,257	189	3,734	231	2,205	161
Asbestos	do.	17,427	W	W	W	W	W
Barite	thousand metric tons	290	12,625	r430	r16,000	448	21,310
Boron minerals (B_2O_3)	metric tons	1,114,007	429,806	1,093,919	436,176	1,240,158	442,531
Bromine[e]	thousand kilograms	175,000	188,650	177,000	97,350	170,000	167,000
Cement:							
Masonry	thousand short tons	3,329	229,441	3,274	225,404	2,637	187,679
Portland	do.	74,202	3,592,255	75,596	3,683,400	68,722	3,343,223
Clays	metric tons	42,254,269	1,515,300	42,904,437	1,619,826	44,091,697	1,505,088
Diatomite	do.	617,164	136,754	631,062	137,982	609,652	139,857
Feldspar	do.	654,313	28,029	630,000	r28,471	580,000	26,000
Fluorspar	do.	e66,000	W	e63,500	W	W	W
Garnet (abrasive)	do.	42,604	4,408	47,009	6,937	50,860	7,534
Gemstones		NA	42,901	NA	52,867	NA	84,386
Gypsum (crude)	thousand short tons	17,624	128,448	16,406	99,567	15,456	94,199
Helium (Grade-A)	million cubic meters	82	106,523	87	113,183	88	174,706
Iodine	kilograms	1,508,000	23,947	1,972,849	30,486	1,998,914	31,389
Lime	thousand short tons	17,152	852,113	17,452	901,549	17,270	890,482
Mica (scrap)	thousand metric tons	119	6,273	109	5,841	103	5,542
Peat	thousand short tons	775	17,636	795	19,200	777	17,887
Perlite	short tons	601,000	16,301	r726,000	r17,443	566,639	15,086
Phosphate rock	thousand metric tons	49,817	1,082,797	46,343	1,075,093	48,096	1,030,913
Potash (K_2O equivalent)	do.	1,595	271,515	1,716	303,337	1,709	304,500
Pumice	metric tons	424,000	8,213	442,848	10,687	401,376	9,190
Salt	thousand short tons	38,356	776,846	40,693	826,659	39,575	801,507

See footnotes at end of table.

TABLE 1—Continued

NONFUEL MINERAL PRODUCTION[1] IN THE UNITED STATES

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS (EXCLUDING FUELS)—Continued							
Sand and gravel:							
Construction	thousand short tons	e897,300	e$3,249,100	910,600	$3,249,400	e780,300	e$2,805,500
Industrial	do.	29,205	410,200	28,406	436,200	25,600	390,477
Sodium compounds:							
Soda ash	thousand metric tons	8,995	764,146	9,156	836,188	9,005	835,577
Sodium sulfate (natural)	do.	340	31,104	349	33,748	354	30,903
Stone:[8]							
Crushed	thousand short tons	1,213,400	5,325,800	e1,222,000	e5,591,300	1,102,878	5,186,821
Dimension	short tons	1,206,995	208,311	e1,186,216	e209,691	1,133,992	195,259
Sulfur (Frasch)	thousand metric tons	3,780	378,712	3,676	335,189	3,119	271,598
Talc and pyrophillite	metric tons	1,253,128	W	W	W	W	W
Tripoli	do.	105,229	2,537	94,389	3,188	88,642	3,271
Vermiculite	short tons	293,320	32,550	229,584	19,075	185,103	13,410
Combined value of aplite, brucite, calcium chloride (natural), emery, graphite (natural, 1989), helium (crude), kyanite, lithium minerals, magnesite, magnesium compounds, marl (greensand), olivine, pyrites, staurolite, wollastonite, and values indicated by symbol W		XX	r483,673	XX	473,453	XX	506,275
Total industrial minerals[6]		XX	20,357,000	XX	r20,895,000	XX	19,539,000
Grand total[6]		XX	r32,220,000	XX	r33,337,000	XX	30,489,000

eEstimated. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2]Recoverable content of ores, etc.

[3]Content of ore and concentrate.

[4]Data series revised to exclude nonnickel ore.

[5]Revised due to the separation of palladium metal from platinum metal.

[6]Data may not add to totals shown because of rounding.

[7]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

[8]Excludes abrasive stone and bituminous limestone and sandstone; all included elsewhere in table.

TABLE 2

TOTAL U.S. NONRENEWABLE ORGANIC MATERIALS PRODUCTION, BY QUANTITY AND VALUE[1]

(Million metric tons, unless otherwise specified)

Category	1989		1990		1991*	
	Quantity	Value (millions)	Quantity	Value (millions)	Quantity	Value (millions)
Asphalt and road oil	25.52	$2,817	25.02	$3,480	25.69	$2,944
Lubricants, waxes, and miscellaneous products	12.78	1,499	12.51	1,863	12.10	1,506
Petrochemical industries	55.66	6,331	57.75	7,759	65.09	7,455
Petroleum coke and coal	11.47	900	13.05	1,291	13.07	1,058
Total[2]	105.43	11,548	108.33	14,394	115.95	12,964

*Estimated.

[1]Quantities valued at the fossil fuel prices given in the Department of Energy, Energy Information Administration, Annual Energy Review 1991, June 1992, p. 69.

[2]Data may not add to totals shown because of independent rounding.

NOTE.—Nonrenewable organic materials represent all nonfuel uses in physical structure applications. The petrochemical industries category includes feedstocks for the production of plastics, synthetic rubber, synthetic fibers, pesticides, coatings, solvents, fertilizers, and other petrochemicals.

TABLE 3[1]

NONFUEL MINERALS PRODUCED IN THE UNITED STATES AND PRINCIPAL PRODUCING STATES IN 1991

Mineral	Principal producing States, in order of quantity	Other producing States
Abrasives[2]	AR, WY, OH	
Antimony[3]	ID	
Aplite	VA	
Asbestos	CA and VT	
Barite	NV, GA, MO, MT	IL.
Bauxite	AL and GA	
Beryllium concentrate	UT	
Boron minerals	CA	
Bromine[e]	AR	
Brucite	NV	
Calcium chloride (natural)	MI and CA	
Cement:		
Masonry	IN, MI, PA, SC	All other States except AK, CT, DE, LA, MA, MN, MS, NV, NH, NJ, NC, ND, OR, RI, VT, WI, WY.
Portland	CA, TX, PA, MI	All other States except CT, DE, LA, MA, MN, NH, NJ, NC, ND, RI, VT, WI.
Clays	GA, WY, CA, TN	All other States except AK, DE, HI, RI, VT, WI.
Copper[3]	AZ, NM, UT, MT	CA, CO, ID, MI, MO, NV, OR, TN.
Diatomite	CA, NV, WA, OR	
Emery	OR	
Feldspar	NC, CA, OK, GA	CT, ID, SD.
Fluorspar	IL	
Garnet (abrasive)	IN and NY	
Gold[3]	NV, CA, UT, MT	AK, AZ, CO, ID, NM, SC, SD, WA.
Graphite (natural)	(4)	
Gypsum (crude)	MI, OK, IA, NV	AR, AZ, CA, CO, IN, KS, LA, NM, NY, SD, TX, UT, VA, WA, WY.
Helium (crude and Grade-A)	KS, WY, TX, CO	NM.
Iodine	OK	
Iron ore (includes byproduct)	MN, MI, UT, MO	AZ, CA, MT, NM, SD, TX.
Iron oxide pigments (crude)	MO, GA, MI, VA	AZ.
Kyanite	VA	
Lead[3]	MO, AK, ID, CO	AZ, MT, NM, NV, NY, TN, WA.
Lime	MO, PA, OH, KY	All other States except AK, CT, DE, FL, GA, HI, KS, ME, MD, MS, NH, NJ, NM, NY, NC, RI, SC, VT.
Lithium minerals	NC and NV	
Magnesite	NV	
Magnesium compounds	MI, CA, FL, UT	DE and TX.
Magnesium metal	TX, WA, UT	
Manganiferous ore	SC	
Marl (greensand)	NJ	
Mercury	NV and CA	
Mica (scrap)	NC, NM, GA, SC	CA, CT, PA, SD.
Molybdenum	CA, AZ, UT, MT	CA, ID, NM, NV.
Nickel ore	OR	
Olivine	WA and NC	
Palladium metal	MT	
Peat	MI, FL, MN, IL	CO, IA, IN, MA, ME, MT, NC, NJ, NY, OH, PA, SC, WA, WI, WV.

See footnotes at end of table.

TABLE 3[1]—Continued

NONFUEL MINERALS PRODUCED IN THE UNITED STATES AND PRINCIPAL PRODUCING STATES IN 1991

Mineral	Principal producing States, in order of quantity	Other producing States
Perlite	NM, AZ, CA, ID	CO and NV.
Phosphate rock	FL, NC, ID, UT	MT.
Platinum metal	MT	
Potash	NM, UT, CA, MI	
Pumice	CA, OR, AZ, NM	ID and KS.
Pyrites (ore and concentrate)	AZ	
Rare-earth metal concentrates	CA and FL	
Salt	NY, LA, OH, MI	AL, AZ, CA, KS, NM, NV, OK, TX, UT, WV.
Sand and gravel:		
Construction	CA, OH, WA, TX	All other States.
Industrial	IL, CA, TX, NJ	All other States except AK, CT, DE, HI, IA, ME, NH, NM, ND, OR, SD, UT, VT, WY.
Silver[3]	NV, ID, AK, MT	AZ, CA, CO, MI, MO, NM, NY, SC, SD, TN, UT, WA.
Sodium compounds:		
Soda ash	WY and CA	
Sodium sulfate (natural)	CA, TX, UT	
Staurolite	FL	
Stone:		
Crushed	PA, IL, VA, FL	All other States except DE.
Dimension	VT, IN, SD, GA	All other States except AK, DE, FL, HI, KY, LA, MS, NE, NV, NJ, ND, OR, RI, UT, WV, WY.
Sulfur (Frasch)	TX and LA	
Talc and pyrophyllite	MT, NY, TX, VT	AL, CA, NC, OR, VA.
Tin	AK	
Titanium concentrates	FL, NJ, CA	
Tripoli	IL, AR, OK, PA	
Tungsten[3]	CA	
Vanadium[3]	ID	
Vermiculite (crude)	SC, VA, MT	
Wollastonite	NY	
Zinc[3]	AK, TN, NY, MO	CO, ID, IL, MT, NM, NV, OR, WA.
Zircon concentrates	FL and NJ	

[e]Estimated.
[1]This table had been table 2 in previous issues of the Minerals Yearbook.
[2]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.
[3]Content of ores, etc.
[4]No production reported.

TABLE 4[1]

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 1991

State	Value (thousands)	Rank	Percent of U.S. total	Principal minerals, in order of value
Alabama	$539,915	20	1.77	Cement (portland), stone (crushed and broken), lime, sand and gravel (construction).
Alaska	494,064	21	1.62	Zinc, lead, sand and gravel (construction), gold.
Arizona	2,829,123	1	9.28	Copper, sand and gravel (construction), molybdenum, cement (portland).
Arkansas	360,984	26	1.18	Bromine, stone (crushed and broken), sand and gravel (construction), cement (portland).
California	2,532,043	2	8.30	Cement (portland), sand and gravel (construction), boron minerals, gold.
Colorado	338,405	31	1.11	Sand and gravel (construction), molybdenum, cement (portland), stone (crushed and broken).
Connecticut	90,833	43	.30	Stone (crushed and broken), sand and gravel (construction, industrial), feldspar.
Delaware[2]	5,101	50	.02	Sand and gravel (construction) and gemstones.
Florida	1,396,164	5	4.58	Phosphate rock, stone (crushed and broken), cement (portland), sand and gravel (construction).
Georgia	1,298,621	6	4.26	Clays, stone (crushed and broken), cement (portland), stone (dimension).
Hawaii[2]	141,112	39	.46	Stone (crushed and broken), cement (portland), sand and gravel (construction), cement (masonry).
Idaho	297,048	33	.97	Phosphate rock, silver, gold, sand and gravel (construction).
Illinois	673,291	16	2.21	Stone (crushed and broken), cement (portland), sand and gravel (construction, industrial).
Indiana	403,295	24	1.32	Stone (crushed and broken), cement (portland), sand and gravel (construction), stone (dimension).
Iowa	344,032	29	1.13	Stone (crushed and broken), cement (portland), sand and gravel (construction), gypsum (crude).
Kansas	365,679	25	1.20	Helium (crude and Grade-A), salt, stone (crushed and broken), cement (portland).
Kentucky	343,124	30	1.13	Stone (crushed and broken), lime, cement (portland), sand and gravel (construction).
Louisiana	351,802	27	1.15	Salt, sulfur (Frasch), sand and gravel (construction), stone (crushed and broken).
Maine	41,304	46	.14	Cement (portland), sand and gravel (construction), stone (crushed and broken), cement (masonry).
Maryland	348,212	28	1.14	Stone (crushed and broken), cement (portland), sand and gravel (construction), cement (masonry).
Massachusetts	111,597	41	.37	Stone (crushed and broken), sand and gravel (construction), stone (dimension), lime.
Michigan	1,503,268	4	4.93	Iron ore (usable), cement (portland), magnesium compounds, sand and gravel (construction).
Minnesota	1,288,885	7	4.23	Iron ore (usable), sand and gravel (construction), stone (crushed and broken), sand and gravel (industrial).
Mississippi	101,859	42	.33	Clays, sand and gravel (construction), cement (portland), stone (crushed and broken).
Missouri	880,352	12	2.89	Lead, cement (portland), stone (crushed and broken), lime.
Montana	590,297	17	1.94	Gold, copper, cement (portland), silver.
Nebraska	89,392	44	.29	Cement (portland), sand and gravel (construction), stone (crushed and broken), lime.
Nevada	2,392,901	3	7.85	Gold, silver, sand and gravel (construction), diatomite.
New Hampshire[2]	30,392	47	.10	Sand and gravel (construction), stone (crushed and broken, dimension), and gemstones.
New Jersey	204,988	37	.67	Stone (crushed and broken), sand and gravel (construction, industrial), zircon concentrates.
New Mexico	985,563	10	3.23	Copper, potash, sand and gravel (construction), molybdenum.

See footnotes at end of table.

TABLE 4[1]—Continued

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 1991

State	Value (thousands)	Rank	Percent of U.S. total	Principal minerals, in order of value
New York	$698,659	14	2.29	Stone (crushed and broken), salt, cement (portland), sand and gravel (construction).
North Carolina	552,898	18	1.81	Stone (crushed and broken), phosphate rock, lithium minerals, sand and gravel (construction).
North Dakota[2]	17,366	48	.06	Sand and gravel (construction), lime, gemstones.
Ohio	683,585	15	2.24	Stone (crushed and broken), sand and gravel (construction), salt, lime.
Oklahoma	275,525	35	.90	Stone (crushed and broken), cement (portland), iodine (crude), sand and gravel (construction).
Oregon	197,928	38	.65	Stone (crushed and broken), sand and gravel (construction), cement (portland), lime.
Pennsylvania	844,001	13	2.77	Stone (crushed and broken), cement (portland), lime, sand and gravel (construction).
Rhode Island[2]	13,263	49	.04	Stone (crushed and broken), sand and gravel (construction), gemstones.
South Carolina	338,145	32	1.11	Cement (portland), stone (crushed and broken), gold, clays.
South Dakota	289,922	34	.95	Gold, cement (portland), sand and gravel (construction), stone (crushed and broken).
Tennessee	547,787	19	1.80	Stone (crushed and broken), zinc, cement (portland), clays.
Texas	1,264,661	8	4.15	Cement (portland), stone (crushed and broken), magnesium metal, sulfur (Frasch).
Utah	1,149,067	9	3.78	Copper, gold, magnesium metal, cement (portland).
Vermont	59,820	45	.20	Stone (dimension, crushed and broken), sand and gravel (construction), talc and pyrophyllite.
Virginia	428,045	23	1.40	Stone (crushed and broken), lime, cement (portland), sand and gravel (construction).
Washington	482,659	22	1.58	Sand and gravel (construction), gold, magnesium metal, stone (crushed and broken).
West Virginia	116,931	40	.38	Stone (crushed and broken), cement (portland), sand and gravel (industrial, construction).
Wisconsin	213,849	36	.70	Stone (crushed and broken), sand and gravel (construction), lime, sand and gravel (industrial).
Wyoming	929,176	11	3.05	Soda ash, clays, helium (Grade-A), cement (portland).
Undistributed	7,386	—	—	
Total[3]	30,489,000	XX	100.00	

XX Not applicable.

[1]This table had been table 3 in previous issues of the Minerals Yearbook.

[2]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Concealed values included with "Undistributed."

[3]Data may not add to totals shown because of rounding.

TABLE 5[1]

VALUE OF NONFUEL MINERAL PRODUCTION PER CAPITA AND PER SQUARE MILE IN 1991, BY STATE

State	Area (square miles)	Population (thousands)	Total value (thousands)	Per square mile		Per capita	
				Dollars	Rank	Dollars	Rank
Alabama	51,705	4,089	$539,915	10,442	25	132	16
Alaska	591,004	570	494,064	836	49	867	3
Arizona	114,000	3,750	2,829,123	24,817	4	754	4
Arkansas	53,187	2,372	360,984	6,787	31	152	14
California	158,706	30,380	2,532,043	15,954	12	83	27
Colorado	104,091	3,377	338,405	3,251	43	100	22
Connecticut	5,018	3,291	90,833	18,101	10	28	44
Delaware	2,044	680	2/5,10	2,496	44	8	50
Florida	58,664	13,277	1,396,164	23,799	5	105	21
Georgia	58,910	6,623	1,298,621	22,044	6	196	11
Hawaii	6,471	1,135	2/141,11	21,807	7	124	17
Idaho	83,564	1,039	297,048	3,555	41	286	10
Illinois	56,345	11,543	673,291	11,949	19	58	38
Indiana	36,185	5,610	403,295	11,145	20	72	31
Iowa	56,275	2,795	344,032	6,113	33	123	18
Kansas	82,277	2,495	365,679	4,444	36	147	15
Kentucky	40,409	3,713	343,124	8,491	27	92	25
Louisiana	47,751	4,252	351,802	7,367	29	83	28
Maine	33,265	1,235	41,304	1,242	47	33	43
Maryland	10,460	4,860	348,212	33,290	1	72	32
Massachusetts	8,284	5,996	111,597	13,471	16	19	48
Michigan	58,527	9,368	1,503,268	25,685	3	160	13
Minnesota	84,402	4,432	1,288,885	15,271	13	291	9
Mississippi	47,689	2,592	101,859	2,136	45	39	41
Missouri	69,697	5,158	880,352	12,631	18	171	12
Montana	147,046	808	590,297	4,014	37	731	5
Nebraska	77,355	1,593	89,392	1,156	48	56	39
Nevada	110,561	1,284	2,392,901	21,643	8	1,864	2
New Hampshire	9,279	1,105	[2]30,392	3,275	42	28	45
New Jersey	7,787	7,760	204,988	26,324	2	26	47
New Mexico	121,593	1,548	985,563	8,105	28	637	7
New York	49,107	18,058	698,659	14,227	14	39	42
North Carolina	52,669	6,737	552,898	10,498	24	82	29
North Dakota	70,703	635	[2]17,366	246	50	27	46
Ohio	41,330	10,939	683,585	16,540	11	62	37
Oklahoma	69,956	3,175	275,525	3,939	38	87	26
Oregon	97,073	2,922	197,928	2,039	46	68	35
Pennsylvania	45,308	11,961	844,001	18,628	9	71	33
Rhode Island	1,212	1,004	[2]13,263	10,943	21	13	49
South Carolina	31,113	3,560	338,145	10,868	22	95	24
South Dakota	77,116	703	289,922	3,760	40	412	8
Tennessee	42,144	4,953	547,787	12,998	17	111	19
Texas	266,807	17,349	1,264,661	4,740	35	73	30
Utah	84,899	1,770	1,153,751	13,590	15	652	6
Vermont	9,614	567	59,820	6,222	32	106	20
Virginia	40,767	6,286	428,045	10,500	23	68	34
Washington	68,138	5,018	482,659	7,084	30	96	23

See footnotes at end of table.

TABLE 5[1]—Continued

VALUE OF NONFUEL MINERAL PRODUCTION PER CAPITA AND PER SQUARE MILE IN 1991, BY STATE

State	Area (square miles)	Population (thousands)	Total value (thousands)	Per square mile		Per capita	
				Dollars	Rank	Dollars	Rank
West Virginia	24,231	1,801	$16,931	4,826	34	65	36
Wisconsin	56,153	4,955	213,849	3,808	39	43	40
Wyoming	97,809	460	929,176	9,500	26	2,020	1
Undistributed	XX	XX	7,386	XX	XX	XX	XX
Total[3 4] or average	3,618,700	251,583	30,489,000	8,425	XX	121	XX

XX Not applicable.

[1]This table had been table 4 in previous issues of the Minerals Yearbook.

[2]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Concealed values included with "Undistributed."

[3]Excludes Washington, DC (which has no mineral production), with an area of 69 square miles and a population of 598,000.

[4]Data may not add to totals shown because of rounding.

Sources: U.S. Bureau of Mines and Bureau of the Census.

TABLE 6[1]

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
ALABAMA							
Cement:							
Masonry	thousand short tons	252	$13,852	262	$15,462	e238	e$14,042
Portland	do.	3,169	130,590	3,585	165,344	e3,937	e181,102
Clays[3]	metric tons	1,878,070	18,537	2,049,776	27,747	2,124,380	22,103
Lime	thousand short tons	1,481	70,361	1,526	70,816	1,510	75,506
Sand and gravel:							
Construction	do.	e10,400	e36,500	14,103	50,243	e12,700	e45,700
Industrial	do.	805	8,092	878	9,075	531	6,133
Stone:							
Crushed and broken[4]	do.	31,737	167,332	e36,100	e202,400	27,145	161,843
Dimension	short tons	W	W	W	W	9,552	2,449
Combined value of bauxite, clays [bentonite, kaolin (1990-91)], gemstones, salt, stone [crushed dolomite and granite (1991), crushed granite (1989-90)], talc and pyrophyllite, zircon concentrates, (1989), and values indicated by symbol W		XX	15,489	XX	r19,493	XX	31,037
Total		XX	460,753	XX	r560,580	XX	539,915
ALASKA							
Gemstones		NA	W	NA	W	NA	5
Gold[5]	kilograms	5,756	70,800	3,232	40,200	3,196	37,331
Sand and gravel (construction)	thousand short tons	e17,000	e48,500	15,100	41,800	e14,000	e39,200
Stone (crushed)	do.	2,900	20,300	e2,700	e19,800	1,085	4,688
Combined value of cement (portland), lead, silver, stone [crushed sandstone (1991)], tin, zinc, and values indicated by symbol W		XX	73,752	XX	r474,781	XX	412,840
Total		XX	213,352	XX	r576,581	XX	494,064
ARIZONA							
Clays	metric tons	188,211	2,506	140,162	2,318	228,411	3,830
Copper[5]	do.	898,466	2,593,734	978,767	2,657,649	1,024,066	2,468,255
Gemstones		NA	2,821	NA	2,098	NA	3,173
Gold[5]	kilograms	2,768	34,047	5,000	62,191	2,068	24,159
Iron oxide pigments (crude)	metric tons	W	W	W	W	18	22
Sand and gravel (construction)	thousand short tons	e33,900	e133,900	27,915	92,166	e22,500	e79,400
Silver[5]	metric tons	171	30,186	173	26,836	148	19,212
Stone (crushed)	thousand short tons	6,649	28,552	e5,300	e13,500	7,060	32,842
Combined value of cement, diatomite (1989-90), gypsum (crude), iron ore (usable, 1991), lead (1989, 1991), lime, molybdenum, perlite, pumice (1990-91), pyrites, salt, sand and gravel (industrial), stone (dimension), tin (1989), and values indicated by symbol W		XX	220,594	XX	r207,591	XX	198,230
Total		XX	3,046,340	XX	r3,064,349	XX	2,829,123

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
ARKANSAS							
Abrasives[6]	metric tons	W	W	W	W	W	$154
Bromine[e]	thousand kilograms	W	W	177,000	$97,350	170,000	167,000
Clays	metric tons	871,313	$17,391	989,383	21,578	[3]856,582	[3]8,048
Gemstones		NA	4,041	NA	1,503	NA	1,846
Sand and gravel:							
Construction	thousand short tons	[e]7,500	[e]25,500	9,663	35,475	[e]8,300	[e]31,100
Industrial	do.	545	5,507	742	7,209	746	7,738
Stone:							
Crushed[4]	do.	18,791	76,419	[e]17,800	[e]76,900	22,140	101,427
Dimension	short tons	W	W	W	W	13,932	1,128
Combined value of bauxite (1989-90), cement, clays (fire, 1991), gypsum (crude), lime, stone [crushed dolomite and traprock (1991), crushed slate and dolomite (1989-90)], talc and pyrophyllite (1989-90), tripoli, vanadium (1989-90), and values indicated by symbol W		XX	253,051	XX	62,625	XX	42,543
Total		XX	381,909	XX	302,640	XX	360,984
CALIFORNIA							
Boron minerals	metric tons	562,311	429,806	1,093,919	436,176	1,240,158	442,531
Cement (portland)	thousand short tons	10,911	642,020	10,032	604,080	[e]8,702	[e]522,120
Clays	metric tons	2,195,830	39,243	[3]2,163,515	[3]40,217	[3]2,074,707	[3]27,464
Gemstones		NA	2,982	NA	1,501	NA	10,450
Gold[5]	kilograms	29,804	366,595	29,607	368,300	29,873	348,919
Gypsum (crude)	thousand short tons	1,734	13,066	W	W	W	W
Lime	do.	395	24,503	345	19,425	307	20,389
Mercury	metric tons	W	W	(7)	(7)	(7)	1
Pumice	do.	79,000	4,612	71,739	5,088	61,237	4,372
Rare-earth metal concentrates	do.	W	W	W	W	16,465	W
Sand and gravel:							
Construction	thousand short tons	[e]138,300	[e]670,800	132,214	626,000	[e]101,900	[e]489,100
Industrial	do.	2,426	43,863	2,452	48,055	2,104	41,690
Silver[5]	metric tons	21	3,650	21	3,209	W	W
Stone:							
Crushed	thousand short tons	54,887	238,034	[e]42,500	[e]200,600	45,816	216,156
Dimension	short tons	28,829	5,564	[e]30,077	[e]5,213	44,757	5,254
Combined value of asbestos, barite (1990), calcium chloride (natural), cement (masonry), clay [fuller's earth, (1990-91)], copper, diatomite, feldspar, iron ore [byproduct material (1989), usable], magnesium compounds, mica (crude, 1991), molybdenum, perlite, potash, salt, soda ash, sodium sulfate (natural), talc and pyrophyllite, titanium concentrates (ilmenite), tungsten ore concentrates, and values indicated by symbol W		XX	369,664	XX	[r]421,820	XX	403,597
Total		XX	2,854,402	XX	[r]2,779,684	XX	2,532,043

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
COLORADO							
Clays	metric tons	265,435	$2,064	262,292	[3]$1,864	[3]263,866	[3]$1,964
Gemstones		NA	240	NA	66	NA	287
Gold[5]	kilograms	3,448	42,411	[r]2,357	[r]29,176	3,181	37,154
Peat	thousand short tons	W	412	W	W	W	396
Sand and gravel (construction)	do.	[e]25,300	[e]104,000	24,938	86,541	[e]26,400	[e]88,200
Silver[5]	metric tons	W	W	23	3,557	20	2,565
Stone:							
Crushed	thousand short tons	[4]7,261	[4]32,435	[e, 4]7,600	[e, 4]36,100	8,401	41,022
Dimension	short tons	5,310	398	[e]8,490	[e]1,394	W	W
Combined value of cement, clay (bentonite, 1990-91), copper, gypsum (crude), helium (Grade-A, 1990-91), lead, lime, molybdenum, perlite, sand and gravel (industrial), stone (crushed traprock, 1989-90), vanadium (1989-90), zinc, and values indicated by symbol W		XX	275,765	XX	227,586	XX	166,817
Total		XX	457,725	XX	386,284	XX	338,405
CONNECTICUT							
Gemstones		NA	2	NA	2	NA	62
Sand and gravel (construction)	thousand short tons	[e]5,800	[e]24,700	8,542	37,943	[e]5,400	[e]24,800
Stone:							
Crushed[4]	do.	11,480	78,734	[e]10,200	[e]70,600	5,873	52,701
Dimension	short tons	W	W	W	W	17,326	1,739
Combined value of clays (common), feldspar, mica (scrap, 1990-91), sand and gravel (industrial), stone [crushed dolomite and other (1991), crushed granite (1989-90)], and values indicated by symbol W		XX	9,780	XX	9,348	XX	11,531
Total		XX	113,216	XX	117,893	XX	90,833
DELAWARE							
Gemstones		NA	1	NA	1	NA	1
Sand and gravel (construction)	thousand short tons	[e]1,900	[e]6,200	2,184	6,967	[e]1,600	[e]5,100
Total[8]		XX	6,201	XX	6,968	XX	5,101
FLORIDA							
Cement:							
Masonry	thousand short tons	477	31,231	442	27,777	[e]214	[e]13,482
Portland	do.	4,357	207,857	3,954	186,404	[e]3,023	[e]142,081
Clays	metric tons	[3]563,687	[3]46,941	[3]391,334	[3]39,625	363,253	39,150
Gemstones		NA	W	NA	W	NA	6
Peat	thousand short tons	235	4,515	252	4,381	244	3,991
Sand and gravel:							
Construction	do.	[e]17,900	[e]55,500	18,472	59,123	[e]16,000	[e]51,400
Industrial	do.	681	7,768	520	7,024	551	5,989
Stone (crushed)	do.	83,995	341,397	[e]74,000	[e]317,400	[4]59,132	[4]260,901
Combined value of clays (common), magnesium compounds, phosphate rock, rare-earth metal concentrates, staurolite, stone [crushed marl (1991)], titanium concentrates (ilmenite and rutile), zircon concentrates, and values indicated by symbol W		XX	913,054	XX	[r]924,788	XX	879,164
Total		XX	1,608,263	XX	[r]1,566,522	XX	1,396,164

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
GEORGIA							
Clays	metric tons	9,768,312	$1,004,954	9,855,248	$1,060,539	9,518,026	$949,737
Gemstones		NA	21	NA	20	NA	10
Sand and gravel:							
Construction	thousand short tons	e6,100	e18,900	5,158	16,644	e4,700	e14,500
Industrial	do.	537	7,013	W	W	W	W
Stone:							
Crushed	do.	50,417	262,805	e53,000	e317,300	3 41,339	3 222,900
Dimension[3]	short tons	145,545	12,087	e147,068	e12,483	173,892	14,167
Combined value of barite, bauxite (1989, 1991), cement, feldspar, iron oxide pigments (crude), mica (scrap), peat (1989-90), stone [crushed marble (1991), dimension marble], talc and pyrophyllite, and values indicated by symbol W		XX	81,515	XX	88,138	XX	97,307
Total		XX	1,387,295	XX	1,495,124	XX	1,298,621
HAWAII							
Cement:							
Masonry	thousand short tons	10	1,566	12	1,870	e10	e600
Portland	do.	493	40,495	532	46,311	e547	e47,589
Gemstones		NA	44	NA	55	NA	60
Sand and gravel (construction)	thousand short tons	e600	e3,200	438	2,459	e400	e2,300
Stone (crushed)	do.	6,205	46,746	e7,000	e55,400	4 10,486	4 90,563
Total[8]		XX	92,051	XX	106,095	XX	141,112
IDAHO							
Clays[3]	metric tons	W	W	W	W	967	W
Copper[5]	do.	2,950	8,516	W	W	W	W
Feldspar	do.	11,612	720	W	W	W	W
Gemstones		NA	500	NA	320	NA	426
Gold[5]	kilograms	3,057	37,602	W	W	3,348	39,107
Lime	thousand short tons	W	W	W	W	150	9,124
Phosphate rock	thousand metric tons	W	W	4,380	r67,978	5,921	86,328
Pumice	metric tons	W	W	31,333	220	36,868	267
Sand and gravel:							
Construction	thousand short tons	e5,800	e18,900	9,222	25,590	e11,600	e31,300
Industrial	do.	459	5,037	552	6,234	W	W
Silver[5]	metric tons	439	77,651	r442	r68,418	337	43,807
Stone:							
Crushed	thousand short tons	3,298	12,609	e4,300	e12,900	3,230	15,057
Dimension	short tons	W	W	—	—	3,596	W
Combined value of antimony, cement, clays, [bentonite (1989), common, kaolin], garnet (abrasive), lead, molybdenum, perlite, vanadium ore, zinc, and values indicated by symbol W		XX	203,075	XX	r195,977	XX	71,632
Total		XX	364,610	XX	r377,637	XX	297,048

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
ILLINOIS							
Cement (portland)	thousand short tons	2,776	$117,224	2,842	$116,781	r/2,654	r/$108,814
Clays[3]	metric tons	142,207	641	598,479	2,516	935,154	38,877
Gemstones		NA	W	NA	W	NA	547
Sand and gravel:							
Construction	thousand short tons	r/33,000	r/108,900	32,380	104,728	r/26,300	r/90,400
Industrial	do.	4,582	52,935	4,486	62,531	4,146	57,210
Stone (crushed)[4]	do.	60,829	256,832	r/62,700	r/283,100	68,586	295,362
Combined value of barite, cement (masonry), clays (fuller's earth 1989-90), copper (1989-90), fluorspar, lead (1989-90), lime, peat, silver (1989-90), stone [crushed sandstone (1989-91), and limestones (1991), dimension], tripoli, zinc, and values indicated by symbol W		XX	96,829	XX	95,478	XX	82,081
Total		XX	633,361	XX	665,134	XX	673,291
INDIANA							
Cement:							
Masonry	thousand short tons	357	24,054	368	27,813	r/317	r/24,092
Portland	do.	2,364	108,297	2,417	114,414	r/2,252	r/105,844
Clays	metric tons	871,179	3,836	2/1,051,703	2/3,273	2/929,964	2/3,516
Gemstones		NA	W	NA	W	NA	561
Peat	thousand short tons	34	607	37	W	26	W
Sand and gravel (construction)	do.	r/29,600	r/99,200	23,879	76,886	r/18,100	r/60,400
Stone:							
Crushed	do.	4/36,188	4/136,252	r/ 4/36,700	r/ 4/147,700	37,924	152,489
Dimension[4]	short tons	198,531	27,212	r/194,728	r/29,504	187,580	27,491
Combined value of abrasives (1989), clays [ball (1990-91)], gypsum (crude), lime, sand and gravel (industrial), stone [crushed marl and miscellaneous stones (1989-90), dimension limestone and dolomite (1991), dimension sandstone (1989-90)], and values indicated by symbol W		XX	34,657	XX	32,176	XX	28,902
Total		XX	434,115	XX	431,766	XX	403,295
IOWA							
Cement:							
Masonry	thousand short tons	47	4,450	53	5,054	r/34	r/3,264
Portland	do.	2,072	102,387	2,525	122,466	r/2,301	r/112,749
Clays	metric tons	439,323	1,773	423,227	1,376	530,477	2,226
Gemstones		NA	10	NA	14	NA	8
Gypsum (crude)	thousand short tons	2,273	16,884	2,192	14,243	2,162	12,285
Sand and gravel (construction)	do.	r/12,800	r/37,800	14,953	46,432	r/17,400	r/55,800
Stone:							
Crushed	do.	28,049	111,182	r/29,000	r/118,600	3/31,057	3/147,815
Dimension	short tons	15,151	613	W	W	W	W
Combined value of other industrial minerals and values indicated by symbol W		XX	7,603	XX	8,185	XX	9,885
Total		XX	282,702	XX	316,370	XX	344,032

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
KANSAS							
Cement:							
Masonry	thousand short tons	42	$2,514	39	$2,011	e30	e$1,530
Portland	do.	1,505	69,390	1,707	76,564	e1,466	e65,970
Clays[3]	metric tons	533,099	2,700	625,969	4,056	607,419	2,828
Gemstones		NA	W	NA	W	NA	527
Helium (Grade-A)	million cubic meters	W	W	W	W	39	76,540
Salt[9]	thousand short tons	1,948	82,212	2,390	92,119	2,316	97,713
Sand and gravel:							
Construction	do.	e13,000	e33,200	10,863	24,170	e9,600	e22,100
Industrial	do.	230	2,690	W	W	W	W
Stone:							
Crushed[4]	do.	15,850	56,976	e20,800	e79,200	16,802	67,249
Dimension	short tons	W	W	W	W	19,651	2,171
Combined value of clay (bentonite, 1989), gypsum (crude), helium (crude), pumice, salt (brine), stone [crushed quartzite (1991), sandstone and quartzite (1989-90)], and values indicated by symbol W		XX	68,449	XX	67,999	XX	29,051
Total		XX	318,131	XX	346,119	XX	365,679
KENTUCKY							
Clays[3]	metric tons	716,990	3,357	826,205	8,282	707,587	2,942
Gemstones		NA	W	NA	W	NA	548
Sand and gravel (construction)	thousand short tons	e5,500	e15,100	8,802	29,581	e7,700	e27,200
Stone (crushed)	do.	4 48,178	4 187,849	4 e50,100	4 e182,900	46,266	191,893
Combined value of cement, clays [ball fire (1989)], lead (1990), lime, sand and gravel (industrial), silver (1990), stone [crushed dolomite (1989-90)], zinc (1990), and values indicated by symbol W		XX	124,353	XX	138,101	XX	120,541
Total		XX	330,659	XX	358,864	XX	343,124
LOUISIANA							
Clays	metric tons	233,992	6,115	368,322	1,066	360,154	3,646
Gemstones		NA	14	NA	7	NA	27
Salt	thousand short tons	13,218	115,203	14,348	120,827	14,595	130,587
Sand and gravel:							
Construction	do.	e13,600	e54,400	14,589	55,902	e13,300	e48,900
Industrial	do.	572	9,664	559	10,003	W	W
Stone (crushed)	do.	3,206	24,414	e2,100	e16,800	W	W
Sulfur (Frasch)	thousand metric tons	1,334	W	1,337	W	1,063	W
Combined value of gypsum (crude), lime, stone [crushed miscellaneous (1991)], and values indicated by symbol W		XX	169,912	XX	163,313	XX	168,642
Total		XX	379,722	XX	367,918	XX	351,802

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
MAINE							
Gemstones		NA	W	NA	W	NA	$174
Sand and gravel (construction)	thousand short tons	°$8,600	°$30,100	7,865	$29,349	°3,900	°14,800
Stone:							
Crushed	do.	1,591	8,801	°1,700	°8,700	1,706	9,899
Dimension	short tons	W	W	W	W	73	88
Combined value of cement, clays (common), peat, and values indicated by symbol W		XX	25,753	XX	24,495	XX	16,343
Total		XX	64,654	XX	62,544	XX	41,304
MARYLAND							
Cement (portland)	thousand short tons	1,871	94,002	1,798	91,172	°1,580	°80,580
Clays	metric tons	351,464	1,882	338,775	1,712	°258,760	°1,141
Gemstones		NA	3	NA	3	NA	3
Peat	do.	3	W	3	W	—	—
Sand and gravel (construction)	do.	°16,900	°84,500	18,271	104,023	°13,000	°72,800
Stone:							
Crushed	do.	30,841	153,375	°30,500	°163,900	25,545	188,001
Dimension	short tons	27,529	2,072	°24,102	°1,751	12,090	967
Combined value of other industrial minerals and values indicated by symbol W		XX	6,216	XX	6,053	XX	4,720
Total		XX	342,050	XX	368,614	XX	348,212
MASSACHUSETTS							
Gemstones		NA	3	NA	1	NA	1
Sand and gravel:							
Construction	thousand short tons	°13,900	°57,000	12,774	51,466	°10,100	°39,400
Industrial	do.	34	601	30	401	30	401
Stone:							
Crushed	do.	11,880	67,768	°9,200	°54,500	7,131	51,362
Dimension	short tons	67,533	10,302	°56,254	°10,992	69,332	11,646
Combined value of clays (common), lime, and peat		XX	8,452	XX	10,138	XX	8,787
Total		XX	144,126	XX	127,498	XX	111,597
MICHIGAN							
Cement:							
Masonry	thousand short tons	255	22,286	272	23,880	°225	°22,440
Portland	do.	5,449	253,324	5,906	263,607	°4,935	°222,075
Clays	metric tons	1,249,198	4,599	1,201,542	4,094	2,061,861	8,770
Gemstones		NA	10	NA	11	NA	10
Gypsum (crude)	thousand short tons	2,089	15,589	2,000	11,511	1,721	13,052
Iron ore (usable)	thousand metric tons	15,045	W	10,034	W	°12,662	W
Lime	thousand short tons	621	32,479	622	30,898	613	30,959
Peat	do.	286	6,082	280	6,264	249	6,442
Sand and gravel:							
Construction	do.	°48,000	°132,000	53,729	153,057	°44,800	°132,200
Industrial	do.	2,865	24,577	2,310	19,285	2,093	18,464
Stone (crushed)	do.	40,905	123,678	°43,100	°129,000	40,989	129,490

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
MICHIGAN—Continued							
Combined value of calcium chloride (natural), copper, gold (1989), iron oxide pigments (crude), magnesium compounds, potash, salt, silver, stone (dimension), and values indicated by symbol W		XX	$84,347	XX	$96,516	XX	$19,366
Total		XX	1,598,971	XX	1,438,123	XX	1,503,268
MINNESOTA							
Gemstones		NA	42	NA	46	NA	62
Iron ore (usable)	thousand metric tons	41,044	1,223,909	45,139	1,308,920	e42,966	e1,157,920
Peat	thousand short tons	33	1,415	48	2,972	35	1,910
Sand and gravel (construction)	do.	e33,700	e82,600	33,869	77,502	e24,500	e58,800
Stone:							
Crushed	do.	8,760	30,218	e9,100	e31,900	8,378	30,624
Dimension	short tons	44,605	16,031	e60,195	e20,836	45,795	13,962
Combined value of clays (common, kaolin), lime, and sand and gravel (industrial)		XX	22,022	XX	27,746	XX	25,607
Total		XX	1,376,237	XX	1,469,922	XX	1,503,268
MISSISSIPPI							
Clays[3]	short tons	899,373	23,573	817,828	16,196	1,172,213	34,382
Gemstones		NA	5	NA	1	NA	1
Sand and gravel (construction)	thousand short tons	e15,600	e51,500	13,032	45,817	e9,900	e33,000
Stone (crushed)	do.	1,069	3,994	e1,400	e5,500	1,632	6,603
Combined value of cement [masonry (1989-90), portland], clays [ball, fuller's earth (1990), kaolin (1991)], and sand and gravel (industrial)		XX	28,539	XX	44,799	XX	27,873
Total		XX	107,611	XX	112,313	XX	101,859
MISSOURI							
Cement (portland)	thousand short tons	4,922	182,005	4,481	180,090	e4,276	e171,040
Clays[3]	metric tons	1,479,898	14,665	1,347,558	12,864	2,001,537	11,060
Iron ore (usable)	thousand metric tons	1,060	W	1,002	W	e224	W
Lead[5]	metric tons	366,931	318,320	r380,781	r386,345	351,995	259,841
Sand and gravel:							
Construction	thousand short tons	e10,000	e32,500	9,243	25,097	e7,400	e20,100
Industrial	do.	750	9,972	W	W	W	W
Silver[5]	metric tons	53	9,456	r42	r6,434	35	4,483
Stone (crushed)	thousand short tons	51,754	171,848	e53,100	e190,900	47,938	167,233
Zinc[5]	metric tons	50,790	91,885	48,864	80,355	42,506	49,453
Combined value of barite, cement (masonry), clays (fuller's earth), copper, gemstones, iron oxide pigments (crude), lime, stone (dimension), and values indicated by symbol W		XX	219,236	XX	r220,555	XX	197,142
Total		XX	1,049,887	XX	r1,102,640	XX	880,352
MONTANA							
Clays	metric tons	295,743	21,835	229,741	2193	362,635	11,332
Gemstones		NA	2,500	NA	3,692	NA	2,796
Gold[5]	kilograms	12,434	152,941	13,012	161,861	18,511	216,211
Palladium metal[10]	do.	4,850	22,454	5,930	21,735	6,050	16,923
Platinum metal[11]	do.	1,430	23,310	1,810	r27,176	1,730	20,635
Sand and gravel (construction)	thousand short tons	e5,800	e13,900	5,114	14,319	e4,800	e13,700

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
MONTANA—Continued							
Silver[5]	metric tons	194	$4,367	220	$4,114	222	$8,893
Stone (crushed)	thousand short tons	2,846	9,718	e4,000	e15,300	2,107	5,725
Talc and pyrophyllite	metric tons	453,978	12,718	430,125	18,883	W	W
Combined value of barite, cement, clays [bentonite (1990), fire (1989)], copper, graphite [natural (1989)], gypsum (crude 1989), iron ore (usable), lead, lime, molybdenum, peat, phosphate rock, sand and gravel (industrial), stone (dimension), vermiculite, zinc, and values indicated by symbol W		XX	292,394	XX	r275,944	XX	274,082
Total		XX	566,137	XX	573,024	XX	590,297
NEBRASKA							
Clays	metric tons	224,624	880	227,292	1,685	198,319	909
Gemstones		NA	2	NA	7	NA	1
Sand and gravel (construction)	thousand short tons	e15,200	e41,800	11,453	30,056	e10,100	e27,300
Stone (crushed)	do.	3,978	20,050	e4,000	e21,200	4,861	23,328
Combined value of cement, lime, and sand and gravel (industrial)		XX	41,085	XX	37,381	XX	37,854
Total		XX	103,817	XX	90,329	XX	89,392
NEVADA							
Barite	thousand metric tons	209	3,473	337	5,884	374	11,933
Clays[3]	metric tons	57,264	5,457	34,625	4,098	15,553	3,204
Gemstones		NA	1,402	NA	407	NA	958
Gold[5]	kilograms	153,995	1,894,172	r179,078	r2,216,233	177,312	2,071,009
Lead[5]	metric tons	—	—	830	842	W	W
Mercury	do.	W	W	W	W	57	202
Perlite	short tons	5,000	136	W	W	W	W
Sand and gravel:							
Construction	thousand short tons	e20,000	e70,000	18,377	59,008	e20,300	e69,000
Industrial	do.	718	W	607	W	546	W
Silver[5]	metric tons	625	110,442	r646	r100,146	578	75,050
Stone (crushed)	thousand short tons	1,560	4,638	e1,600	e5,000	1,199	6,527
Zinc[5]	metric tons	—	—	7,889	12,973	W	W
Combined value of brucite, cement (portland), clays [fuller's earth (1990-91), kaolin], copper, diatomite, fluorspar (1989-90), gypsum (crude), lime, lithium minerals, magnesite, molybdenum, salt, and values indicated by symbol W		XX	220,441	XX	r216,820	XX	155,018
Total		XX	2,310,161	XX	r2,621,411	XX	2,392,901
NEW HAMPSHIRE							
Gemstones		NA	51	NA	38	NA	31
Sand and gravel (construction)	thousand short tons	e6,000	e20,400	7,901	26,599	e4,700	e16,200
Stone:							
Crushed	do.	771	4,020	e600	e2,500	1,542	9,148
Dimension	short tons	55,305	8,769	e45,073	e6,029	34,803	5,013
Total[8]		XX	33,240	XX	35,166	XX	30,392

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
NEW JERSEY							
Clays[3]	metric tons	18,492	$400	W	W	W	W
Gemstones		NA	3	NA	$3	NA	$3
Peat	thousand short tons	W	638	W	527	W	541
Sand and gravel:							
Construction	do.	e15,200	e68,400	13,862	64,245	e10,300	e47,900
Industrial	do.	1,797	26,138	1,762	26,190	1,634	23,738
Stone (crushed)	do.	20,799	140,998	e21,200	e131,700	4 16,680	4 119,287
Zircon concentrates	metric tons	W	8,988	W	W	W	W
Combined value of clays [common, fire (1990-91)], marl (greensand), stone [crushed sandstone and other (1991)], titanium concentrates [ilmenite and rutile (1991)], and values indicated by symbol W		XX	3,318	XX	6,805	XX	13,519
Total		XX	248,883	XX	229,470	XX	204,988
NEW MEXICO							
Clays	metric tons	31,012	94	3 27,994	3 74	3 27,794	3 74
Copper[5]	do.	259,640	749,540	262,815	713,622	252,859	609,454
Gemstones		NA	279	NA	225	NA	100
Gold[5]	kilograms	1,076	13,231	888	11,041	W	W
Lead[5]	metric tons	W	W	W	W	193	142
Perlite	short tons	487,000	13,080	501,000	r13,181	W	W
Potash	thousand metric tons	1,365	242,619	1,451	245,571	1,469	250,900
Pumice	metric tons	77,000	795	W	W	W	W
Sand and gravel (construction)	thousand short tons	e11,800	e45,400	10,362	39,708	e9,200	e35,900
Silver[5]	metric tons	W	W	48	7,431	W	W
Stone (crushed)	thousand short tons	2,784	11,672	e2,400	e12,800	2,801	13,089
Combined value of cement, clays [fire (1990-91)], gypsum (crude), helium (Grade-A), iron ore [includes byproduct material (1989-90), usable], mica (scrap), molybdenum, salt, stone (dimension), zinc, and values indicated by symbol W		XX	45,593	XX	r59,828	XX	75,904
Total		XX	1,122,303	XX	r1,103,481	XX	985,563
NEW YORK							
Clays	metric tons	531,559	3,429	490,552	2,906	421,003	2,417
Gemstones		NA	350	NA	365	NA	125
Peat	thousand short tons	W	10	W	W	1	21
Salt	do.	5,424	161,427	5,401	162,900	4,998	173,837
Sand and gravel:							
Construction	do.	e31,600	e118,500	29,750	121,525	e23,700	e95,500
Industrial	do.	53	633	W	W	W	W
Stone:							
Crushed	do.	39,851	201,749	e39,900	e207,600	34,871	195,639
Dimension	short tons	23,756	3,575	e23,437	e3,589	18,624	2,978
Combined value of cement, garnet (abrasive), gypsum (crude), iron ore [includes byproduct material (1989)], lead, silver, talc and pyrophyllite, wollastonite, zinc, and values indicated by symbol W		XX	255,495	XX	273,954	XX	228,142
Total		XX	745,168	XX	772,839	XX	698,659

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
NORTH CAROLINA							
Clays	metric tons	2,270,384	$15,529	[3]2,179,428	[3]$9,356	[3]2,063,875	[3]$9,015
Feldspar	do.	435,845	14,024	418,402	[r]14,460	402,448	13,027
Gemstones		NA	784	NA	1,057	NA	785
Mica (scrap)	thousand metric tons	73	4,192	65	3,796	64	3,747
Peat	thousand short tons	W	W	13	W	21	W
Sand and gravel:							
Construction	do.	[e]11,200	[e]43,700	11,733	44,872	[e]9,900	[e]35,000
Industrial	do.	1,627	19,902	1,177	15,338	1,174	15,565
Stone:							
Crushed	do.	51,519	257,976	[e]52,900	[e]276,200	[4]46,514	[4]243,920
Dimension	short tons	62,665	10,477	[e]66,531	[e]11,551	32,489	10,128
Combined value of clays [kaolin (1990-91)], lithium minerals, olivine, phosphate rock, stone [crushed volcanic cinder (1991)], talc and pyrophyllite, and values indicated by symbol W		XX	214,984	XX	[r]213,112	XX	221,711
Total		XX	581,568	XX	[r]589,742	XX	552,898
NORTH DAKOTA							
Clays	metric tons	47,903	W	50,485	W	27,825	W
Gemstones		NA	10	NA	10	NA	6
Lime	thousand short tons	107	5,439	82	4,623	98	5,360
Sand and gravel (construction)	do.	[e]3,600	[e]8,100	7,644	17,219	[e]5,000	[e]12,000
Stone (crushed)	short tons	—	—	[e]1,000	[e]4,600	11	W
Combined value of other industrial minerals and values indicated by symbol W		XX	111	XX	116	XX	([12])
Total		XX	13,660	XX	26,568	XX	[8]17,366
OHIO							
Cement:							
Masonry	thousand short tons	128	11,233	124	10,880	[e]109	[e]9,591
Portland	do.	1,446	73,230	1,426	72,883	[e]1,356	[e]69,156
Clays	metric tons	3,519,668	14,983	2,546,151	13,334	2,204,635	11,015
Gemstones		NA	18	NA	W	NA	57
Lime	thousand short tons	1,888	94,157	1,884	92,817	1,783	85,976
Peat	do.	8	182	12	182	9	222
Sand and gravel:							
Construction	do.	[e]44,400	[e]148,700	44,552	165,394	[e]42,300	[e]160,100
Industrial	do.	1,394	24,662	1,349	24,205	1,294	23,462
Stone:							
Crushed	do.	46,426	183,190	[e]48,400	[e]190,900	[4]47,310	[4]184,177
Dimension	short tons	59,923	3,455	[e]61,783	[e]3,468	[4]42,355	[4]2,279
Combined value of abrasives, gypsum (crude), salt, stone [crushed limestone and dolomite (1991), dimension limestone (1991)], and value indicated by symbol W		XX	145,346	XX	154,777	XX	137,550
Total		XX	699,156	XX	728,840	XX	683,585

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
OKLAHOMA							
Cement (portland)	thousand short tons	1,236	$39,360	1,544	$60,457	e1,620	e$63,180
Clays	metric tons	565,956	1,619	631,302	3,156	e824,176	e4,178
Gypsum (crude)	thousand short tons	2,523	14,369	2,184	11,154	2,356	12,925
Iodine (crude)	kilograms	1,505,714	23,947	1,972,849	30,486	1,998,914	31,389
Sand and gravel:							
Construction	thousand short tons	e8,500	e20,000	9,235	21,993	e9,000	e22,300
Industrial	do.	1,216	18,310	1,258	22,984	1,241	20,918
Stone:							
Crushed[4]	do.	23,598	81,969	e25,300	e89,500	25,678	95,509
Dimension	short tons	8,290	762	e8,138	e684	e3,836	e596
Tripoli	metric tons	W	W	18,801	155	15,885	141
Combined value of cement (masonry), feldspar, gemstones, lime, salt (1990-91), stone [crushed dolomite, dimension sandstone (1991)], and values indicated by symbol W		XX	18,695	XX	19,608	XX	24,389
Total		XX	219,031	XX	260,177	XX	275,525
OREGON							
Cement (portland)	thousand short tons	W	W	W	W	e249	e18,675
Clays	metric tons	210,893	875	223,452	1,390	213,356	1,086
Gemstones		NA	1,304	NA	1,683	NA	2,758
Nickel ore[13]	metric tons	NA	NA	330	NA	5,523	NA
Sand and gravel (construction)	thousand short tons	e14,400	e49,700	15,785	60,928	e15,600	e62,800
Stone (crushed)[4]	do.	18,407	81,204	e18,000	e86,600	20,608	89,322
Talc and pyrophyllite	metric tons	204	18	105	10	63	67
Zinc[5]	do.	—	—	—	—	751	873
Combined value of cement [masonry (1989-90)], copper (1991), diatomite, emery, gold (1989-90), lime, pumice, silver (1989-90), stone [crushed dolomite and quartzite (1989-90), crushed slate (1991)], value indicated by symbol W		XX	49,965	XX	r53,984	XX	22,347
Total		XX	183,066	XX	204,595	XX	197,928
PENNSYLVANIA							
Cement:							
Masonry	thousand short tons	349	26,473	303	22,594	e253	e18,975
Portland	do.	5,757	301,980	5,621	286,185	e4,881	e248,931
Clays[3]	metric tons	1,049,973	4,936	840,646	2,900	701,399	2,890
Gemstones		NA	5	NA	5	NA	5
Lime	thousand short tons	1,660	92,139	1,626	92,557	1,695	95,328
Peat	do.	20	746	18	730	10	207
Sand and gravel (construction)	do.	e19,500	e94,600	20,883	97,348	e18,300	e87,800
Stone:							
Crushed[4]	do.	93,123	455,004	e95,800	e502,700	70,334	362,306
Dimension	short tons	44,267	10,032	e43,952	e9,898	38,493	10,077
Combined value of clays [fire (1990), kaolin], mica (scrap), sand and gravel (industrial), stone [crushed granite (1989-90), crushed limestone, dolomite, and quartzite (1991)], and tripoli		XX	14,754	XX	15,125	XX	17,482
Total		XX	1,000,669	XX	1,030,042	XX	844,001

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
RHODE ISLAND							
Gemstones		NA	$2	NA	$2	NA	$1
Sand and gravel (construction)	thousand short tons	e1,100	e3,900	1,969	9,042	e1,300	e6,000
Stone (crushed)	do.	[14]1,208	7,170	e [14]1,600	e8,800	1,187	7,262
Total[8]		XX	11,072	XX	17,844	XX	13,263
SOUTH CAROLINA							
Cement (portland)	thousand short tons	2,188	99,083	2,464	109,644	e2,215	e99,675
Clays	metric tons	1,596,153	39,075	2,062,824	44,486	1,709,205	25,662
Gemstones		NA	10	NA	10	NA	10
Sand and gravel:							
Construction	thousand short tons	e7,500	e23,300	8,627	24,941	e6,600	e18,900
Industrial	do.	842	16,635	844	15,972	822	16,348
Stone:							
Crushed[4]	do.	24,429	111,656	e26,200	e135,400	18,216	84,260
Dimension	short tons	W	W	W	W	8,829	854
Combined value of cement (masonry), gold, manganiferous ore, mica (scrap), peat, silver, stone [crushed shell (1989-90), crushed dolomite (1991)], vermiculite, and values indicated by symbol W		XX	135,538	XX	119,400	XX	92,436
Total		XX	425,297	XX	449,853	XX	338,145
SOUTH DAKOTA							
Gemstones		NA	150	NA	110	NA	W
Gold[5]	kilograms	16,123	198,318	r17,870	r221,157	16,371	191,217
Lead[5]	metric tons	4	3	—	—	—	—
Sand and gravel (construction)	thousand short tons	e6,400	e20,800	9,689	23,689	e8,700	e20,800
Silver[5]	metric tons	4	705	r10	r1,566	7	944
Stone:							
Crushed	thousand short tons	3,833	14,303	e4,800	e16,800	4,824	19,657
Dimension	short tons	54,623	17,738	e50,688	e12,871	W	W
Combined value of cement, clays (common), feldspar, gypsum (crude), iron ore (usable), lime, mica (scrap), and values indicated by symbol W		XX	32,341	XX	34,310	XX	57,304
Total		XX	284,358	XX	r310,503	XX	289,922
TENNESSEE							
Clays[3]	metric tons	1,137,152	$26,292	1,060,662	$25,776	828,635	$44,572
Sand and gravel (construction)	thousand short tons	e6,100	e21,900	7,619	23,474	e6,700	e21,100
Stone:							
Crushed	do.	52,917	252,785	e54,600	e268,600	44,088	223,561
Dimension	short tons	4,888	437	e10,108	e2,051	3,460	260
Combined value of barite (1989), cement, clays [common (1989,1991), fuller's earth], copper, gemstones, lead, lime, phosphate rock (1989-90), sand and gravel (industrial), silver, and zinc		XX	336,993	XX	r344,627	XX	258,294
Total		XX	638,407	XX	r664,528	XX	547,787

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
TEXAS							
Cement:							
Masonry	thousand short tons	133	$10,735	142	$10,106	W	W
Portland	do.	7,200	286,236	7,678	296,680	e7,498	e$289,341
Clays[3]	metric tons	2,276,629	15,962	2,162,095	14,652	2,265,746	13,247
Gypsum (crude)	thousand short tons	1,993	17,044	1,868	10,166	1,609	9,240
Lime	do.	1,304	60,829	1,337	76,181	1,373	69,400
Salt	do.	7,856	69,934	8,212	75,149	8,935	73,117
Sand and gravel:							
Construction	do.	e43,900	e155,800	46,083	158,080	e38,800	e135,800
Industrial	do.	1,661	29,107	1,849	40,880	1,557	27,002
Stone:							
Crushed	do.	76,823	252,982	e81,800	e285,700	65,813	226,836
Dimension	short tons	81,268	12,449	e84,500	e12,600	W	W
Sulfur (Frasch)	thousand metric tons	2,446	W	2,340	W	2,056	W
Talc and pyrophyllite	metric tons	241,777	4,564	227,138	4,844	212,887	4,561
Combined value of clays [ball (1989, 1991), bentonite (1990-91), fuller's earth (1990-91), kaolin], gemstones, helium (crude and Grade-A), iron ore (usable), magnesium compounds, magnesium metal, sodium sulfate (natural), and values indicated by symbol W		XX	546,812	XX	472,187	XX	416,117
Total		XX	1,462,454	XX	1,457,225	XX	1,264,661
UTAH							
Beryllium concentrates	metric tons	4,592	5	4,548	5	7,339	5
Clays	do.	321,949	2,633	e277,795	e1,774	e210,382	e1,028
Gemstones		NA	659	NA	713	NA	489
Lime	thousand short tons	373	17,974	354	18,878	325	18,634
Salt	do.	1,183	40,421	1,171	50,436	1,326	29,959
Sand and gravel:							
Construction	do.	e14,300	e41,500	13,601	44,881	e14,400	e48,200
Industrial	do.	3	60	2	42	—	—
Silver[5]	metric tons	W	W	147	22,750	W	W
Stone (crushed)	thousand short tons	4,683	19,176	e4,600	e20,200	4,450	18,259
Combined value of cement, clays [bentonite (1990-91)], copper, fluorspar (1990), gold, gypsum (crude), iron ore (usable), magnesium compounds, magnesium metal, mercury (1989-90), molybdenum, phosphate rock, potash, sodium sulfate (natural), vanadium ore (1989-90), and values indicated by symbol W		XX	1,168,065	XX	r1,174,213	XX	1,037,177
Total		XX	1,290,493	XX	1,333,892	XX	1,153,751

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
VERMONT							
Gemstones		NA	$10	NA	$10	NA	$5
Sand and gravel (construction)	thousand short tons	r6,900	r20,400	3,675	11,948	r3,000	r9,900
Stone:							
Crushed	do.	3,119	28,110	r3,700	r35,000	2,685	12,666
Dimension	short tons	100,698	31,413	r99,243	r28,950	92,676	31,013
Combined value of other industrial minerals		XX	8,969	XX	6,046	XX	6,236
Total		XX	88,902	XX	81,954	XX	59,820
VIRGINIA							
Clays[3]	metric tons	1,001,394	6,302	882,383	3,741	723,495	3,248
Gemstones		NA	27	NA	34	NA	70
Lime	thousand short tons	821	38,353	846	39,784	825	39,612
Sand and gravel (construction)	do.	r12,900	r49,700	13,096	48,950	r9,700	r36,900
Stone:							
Crushed	do.	64,061	328,050	r59,400	r320,000	48,861	260,966
Dimension	short tons	W	W	W	W	11,046	3,061
Combined value of aplite, cement, clays (fuller's earth), gypsum (crude), iron oxide pigments (crude), kyanite, sand and gravel (industrial), talc and pyrophyllite, vermiculite, and values indicated by symbol W		XX	86,669	XX	94,766	XX	84,188
Total		XX	509,101	XX	507,275	XX	428,045
WASHINGTON							
Clays	metric tons	233,267	1,591	158,257	1,357	263,374	2,633
Gemstones		NA	208	NA	281	NA	85
Gold[5]	kilograms	W	W	9,620	119,671	9,954	116,260
Sand and gravel (construction)	thousand short tons	r37,800	r124,700	40,251	133,067	40,200	140,700
Stone (crushed)	do.	13,259	55,624	r12,700	r41,900	13,126	59,588
Combined value of cement, diatomite, gypsum (crude), lead (1991), lime, magnesium metal, olivine, peat, sand and gravel (industrial), silver, stone (dimension), zinc (1991), and value indicated by symbol W		XX	298,756	XX	176,953	XX	163,393
Total		XX	480,879	XX	473,229	XX	482,659
WEST VIRGINIA							
Clays	metric tons	251,385	553	164,257	384	134,262	322
Gemstones		NA	1	NA	1	NA	2
Sand and gravel (construction)	thousand short tons	r2,300	r6,700	3,208	14,950	r3,100	r14,300
Stone (crushed)	do.	r4 10,904	r4 42,538	r4 12,000	r4 45,200	10,255	50,505
Combined value of cement, lime, peat (1990-91), salt, sand and gravel (industrial), and stone (crushed granite, 1989-90)		XX	75,706	XX	75,803	XX	51,802
Total		XX	125,498	XX	136,338	XX	116,931

See footnotes at end of table.

TABLE 6[1]—Continued

NONFUEL MINERAL PRODUCTION[2] IN THE UNITED STATES, BY STATE

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
WISCONSIN							
Gemstones		NA	W	NA	W	NA	$542
Lime	thousand short tons	437	$18,129	461	$24,608	536	23,225
Peat	do.	13	309	12	256	9	227
Sand and gravel:							
Construction	do.	e21,700	e56,400	29,572	73,750	e29,600	e77,500
Industrial	do.	1,514	22,399	W	W	W	W
Stone:							
Crushed	do.	26,520	83,664	e26,600	e91,000	r23,676	r80,475
Dimension	short tons	35,587	4,376	e31,316	e3,811	r37,470	r4,347
Combined value of other industrial minerals and value indicated by symbol W		XX	([12])	XX	18,622	XX	27,533
Total		XX	e185,277	XX	212,047	XX	213,849
WYOMING							
Clays[3]	metric tons	2,166,497	74,697	2,523,573	76,082	2,496,361	81,573
Gemstones		NA	157	NA	151	NA	61
Lime	thousand short tons	W	W	W	W	37	2,729
Sand and gravel (construction)	do.	e4,500	e15,400	4,329	14,446	e3,500	e11,900
Stone (crushed)	do.	2,990	12,120	e2,200	e14,000	2,946	12,645
Combined value of cement [masonry (1989-90), portland], clays (common), gypsum (crude), helium (Grade-A), soda ash, and values indicated by symbol W		XX	724,987	XX	806,169	XX	820,268
Total		XX	827,361	XX	910,848	XX	929,176
UNDISTRIBUTED							
Delaware, Hawaii, New Hampshire, North Dakota (1991), Rhode Island, Wisconsin (1989), and Undistributed (1989, 1991)		XX	9,043	XX	5,938	XX	7,386

eEstimated. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data, value included with "Combined value." XX Not applicable.

[1]This table had been table 5 in previous issues of the Minerals Yearbook.

[2]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[3]Excludes certain clays; kind and value included with "Combined value."

[4]Excludes certain stones; kind and value included with "Combined value."

[5]Recoverable content of ores, etc.

[6]Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

[7]Less than 1/2 unit.

[8]Partial total, excludes values that must be concealed to avoid disclosing company proprietary data. Values excluded from partial total included with "Undistributed States."

[9]Excludes salt in brines; value included with "Combined value."

[10]Palladium metal separated from platinum-group metals in 1990: 1989 data revised.

[11]Platinum metal separated from platinum-group metals in 1990: 1989 data revised.

[12]Value excluded to avoid disclosing company proprietary data.

[13]Data series revised to exclude nonnickel ore.

[14]Excludes traprock.

TABLE 7[1]

NONFUEL MINERAL PRODUCTION[2] IN THE COMMONWEALTH OF PUERTO RICO AND ISLANDS ADMINISTERED BY THE UNITED STATES

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
PUERTO RICO							
Cement (portland)	thousand short tons	1,374	$112,318	1,486	$122,027	e1,382	e$110,560
Clays	metric tons	136,873	311	W	W	145,483	355
Lime	thousand short tons	26	3,800	29	3,483	30	4,440
Sand and gravel (industrial)	do.	30	600	55	825	55	825
Stone (crushed)	do.	8,389	46,648	NA	NA	8,828	49,839
Total		XX	163,677	XX	[3]126,335	XX	166,019
ADMINISTERED ISLANDS							
American Samoa: Stone (crushed)	thousand short tons	48	476	—	—	69	756
Guam: Stone (crushed)	do.	1,063	11,133	—	—	2,201	18,038
Virgin Islands : Stone (crushed)	do.	312	3,159	—	—	W	W
Total		XX	14,768	XX	—	XX	18,794

eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in "Total." XX Not applicable.

[1]This table is a compilation of previous Minerals Yearbook tables 6 and 7.

[2]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[3]Total does not include value of item withheld.

TABLE 8

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS					
Aluminum:					
Aluminum oxide (alumina)	thousand metric tons	1,263	$425,712	1,351	$408,367
Crude and semicrude	metric tons	1,659,124	3,294,938	1,762,287	3,356,065
Manufactures	do.	1,696,203	3,429,659	1,824,468	3,557,070
Speciality compounds (aluminum sulfate, aluminum oxide abrasives, and various fluorine-base compounds)	do.	20,722	19,428	39,200	45,630
Antimony:					
Metal, alloys, waste and scrap	do.	588	1,143	694	1,138
Oxide (antimony content)	do.	7,142	13,962	3,752	7,404
Bauxite (dried and calcined)	thousand metric tons	74	12,644	44	9,148
Beryllium [alloys (wrought or unwrought), and waste and scrap]	kilograms	45,227	4,831	33,122	2,690
Bismuth metal (alloys, waste and scrap)	do.	121,677	878	74,597	641
Cadmium metal (alloys, dross, flue dust, residues, and scrap)	metric tons	385	1,174	158	218
Chromium:					
Chemicals	do.	22,500	26,449	23,237	30,514
Chromite ore and concentrate	do.	6,321	1,488	8,759	2,041
Metal and alloys	do.	9,456	13,984	11,073	16,398
Pigments	do.	2,643	9,252	1,969	7,423
Cobalt:					
Metal (unwrought, powders, waste and scrap, and mattes and other intermediate metallurgy products)	do.	543	8,880	543	13,963
Metal (wrought and cobalt articles)	do.	481	12,300	323	13,400
Ores and concentrates	do.	49	416	9	231
Oxides and hydroxides	do.	922	6,776	1,102	10,623
Other forms (acetates and chlorides)	do.	542	2,477	822	5,866
Columbium:					
Ferrocolumbium	thousand kilograms	585	5,495	741	6,952
Ores and concentrates	do.	48	337	8	55
Copper:					
Scrap (alloy and unalloyed)	metric tons	324,390	520,141	306,593	446,363
Semimanufactures [bare wire (includes wire rod), bars, cable foil, oxides, hydroxides, pipes, plates, sheets, tubing, and wire (stranded)]	do.	68,519	278,528	77,438	306,873
Sulfate	do.	559	NA	827	2,361
Unmanufactures (ash, anodes, blister, concentrates, matte, ore, precipitates, refined, and unalloyed scrap, copper content)	do.	647,154	1,239,714	679,654	1,215,720
Gold:					
Bullion (refined)	kilograms	140,923	1,719,470	174,377	2,038,850
Doré and precipitates	do.	88,203	413,980	45,536	486,266
Ores and concentrates	do.	328	3,721	10	98
Wastes and scrap	do.	66,943	729,150	64,204	653,748
Indium	do.	NA	NA	NA	NA
Iron ore:					
Ore and agglomerates	thousand metric tons	3,199	124,076	4,045	156,242
Iron and steel:					
Cast iron and steel products	do.	172	315,114	165	338,944
Direct-reduced iron	do.	63	38,103	22	33,845
Fabricated steel products	do.	578	1,580,893	645	1,742,491

See footnotes at end of table.

TABLE 8—Continued

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Iron and steel—Continued:					
Ferroalloys not elsewhere listed:					
Ferrophosphorous	metric tons	5,981	$2,344	2,872	$1,822
Ferrozirconium	do.	88	74	95	138
Ferroalloys (n.e.c.)	do.	3,893	5,229	2,800	4,112
Pig iron	thousand metric tons	14	1,618	15	1,700
Steel mill products	do.	3,904	2,768,712	5,757	3,671,704
Iron and steel scrap [includes mixed rails (new and used) for rerolling and other uses, and ships, boats, and other vessels for scrapping]	do.	11,657	1,657,884	9,514	1,257,388
Lead:					
Ash and residues (lead content)	metric tons	12,765	8,096	11,828	4,106
Ore and concentrate (lead content)	do.	56,600	33,369	87,953	25,159
Scrap	do.	75,507	33,934	93,262	26,574
Unwrought metal and alloys (lead content)	do.	57,226	59,080	94,428	69,982
Wrought metal and alloys (lead content)	do.	6,759	19,923	7,615	20,614
Magnesium:					
Alloys	do.	4,633	16,050	3,233	10,132
Metal	do.	41,882	124,714	42,859	119,848
Powder, sheets, tubing, ribbons, wire, and other forms and other forms	do.	4,352	21,127	8,149	18,046
Waste and scrap	do.	967	2,522	919	2,304
Manganese:					
Ferromanganese (all grades)	short tons	8,302	6,565	16,064	15,414
Metal (alloys, waste, and scrap)	do.	6,773	14,043	5,811	12,658
Ore and concentrates	do.	77,101	9,297	73,074	8,523
Silicomanganese	do.	1,974	1,666	3,167	2,802
Mercury metal	metric tons	311	2,440	786	3,144
Molybdenum (molybdenum content):					
Ferromolybdenum	do.	300	2,372	375	3,058
Ore and concentrates	do.	41,380	169,888	33,424	113,709
Oxides and hydroxides	do.	787	5,095	1,571	9,678
Molybdates (all)	do.	680	3,963	740	3,965
Powder	do.	292	4,565	230	4,907
Unwrought	do.	180	2,453	88	1,204
Wire	do.	338	12,863	360	12,053
Wrought	do.	190	7,595	110	5,570
Nickel (nickel content):					
Unwrought					
Primary [anodes (electroplating), briquets, cathodes, chemicals (catalysts and salts), ferronockel, flakes, oxide sinter, pellets, powder, and shot]	do.	8,873	77,047	9,104	91,359
Secondary (stainless steel and scrap)	do.	37,057	338,770	36,902	334,764
Wrought (bars, foil, pipes, profiles, rods, sheets, strips, tubes, and wire)	do.	465	5,937	354	5,756
Platinum-group metals (iridium, osmium, palladium, platinum, rhodium, ruthenium, and waste and scrap)	kilograms	55,044	415,605	39,624	461,588
Rare-earth metals (rare-earth oxide content):					
Cerium compounds	do.	1,729,771	9,983	1,368,535	8,195
Compounds (inorganic and organic)	do.	2,085,214	18,010	1,793,092	20,954
Ferrocerium and pyrophoric alloys	do.	2,033,217	8,685	2,099,616	9,343

See footnotes at end of table.

TABLE 8—Continued

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Rare-earth metals (rare-earth oxide content)—Continued:					
Metals (includes scandium and yttrium)	kilograms	201,122	$1,249	59,035	$2,683
Ores and concentrates	metric tons	NA	NA	459	NA
Selenium (metal, waste and scrap, selenium content)	kilograms	194,608	1,283	210,495	1,939
Silicon:					
Ferrosilicon	metric tons	50,079	43,993	50,393	43,008
Metal	do.	8,980	92,229	8,246	112,323
Silver:					
Bullion (refined)	kilograms	735,993	119,892	787,474	115,224
Doré and precipitates	do.	13,184	2,353	53,128	8,486
Ores and concentrates	do.	21,861	3,994	299	49
Waste and scrap	do.	1,077,421	159,194	840,229	124,015
Tantalum:					
Ores and concentrates (includes synthetic)	thousand kilograms	14	138	11	248
Unwrought (alloys, metal, powders, and waste and scrap) waste and scrap)	do.	183	29,200	208	27,646
Wrought	do.	60	20,068	77	26,580
Thorium:					
Compounds	kilograms	220	68	2,649	154
Tin:					
Ingots and pigs	metric tons	658	3,344	970	5,455
Tin scrap and other tin-bearing material, except tinplate scrap, (includes bars, rods, profiles, wire, powders, flakes, tubes, and pipes)	do.	106,389	55,921	121,359	88,327
Tinplate and terneplate	do.	145,396	78,687	150,187	89,677
Titanium:					
Metal:					
Scrap	do.	5,487	22,443	4,568	10,706
Sponge	do.	331	2,073	418	2,604
Other unwrought (billet, blooms and sheet bars, ingots, etc.)	do.	5,472	69,235	3,845	47,833
Wrought (bars, rods, etc.)	do.	4,526	148,290	3,300	113,060
Ores and concentrates	do.	18,765	7,398	26,912	10,167
Pigments (dioxides and oxides)	do.	202,288	434,560	189,679	349,516
Tungsten (tungsten content):					
Ammonium paratungstate	do.	356	2,456	770	4,114
Carbide powder	do.	1,074	21,946	839	18,880
Metal and alloy powder	do.	988	18,587	689	13,947
Miscellaneous tungsten-bearing materials [ferrotungsten and ferrosilicon tungsten, unwrought, wire (metal and alloy), wrought, other compounds (other tungstates), and other metal]	do.	795	36,683	822	40,037
Ore and concentrate	do.	139	765	21	165
Vanadium:					
Aluminum-vanadium master alloy	kilograms	381,595	7,468	170,392	4,344
Compounds [pentoxide (includes catalysts), and other (excludes vanadates), vanadium content]	do.	2,437,934	16,166	1,810,150	10,957
Ferrovanadium	do.	334,272	5,480	178,027	2,454

See footnotes at end of table.

TABLE 8—Continued

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Zinc:					
Blocks, pigs, anodes, etc. (unwrought and unwrought alloys)	metric tons	5,804	$11,304	5,477	$8,680
Compounds	do.	8,089	39,182	9,659	42,346
Dust and flakes	do.	8,701	17,039	5,737	8,247
Ore and concentrate	do.	220,446	188,686	381,416	221,948
Oxide	do.	7,141	10,032	6,653	8,756
Waste and scrap (zinc content)	do.	109,316	85,749	96,314	61,706
Wrought zinc and zinc alloys (angles, bars, pipes, plates, rods, strips, etc.)	do.	15,612	18,541	16,536	22,466
Zirconium:					
Ore and concentrates	do.	30,195	21,101	31,333	20,607
Unwrought waste and scrap	do.	188	3,057	238	5,785
Total metals[1]		XX	21,926,000	XX	22,955,000
INDUSTRIAL MINERALS					
Abrasive materials (includes reexports):					
Natural		XX	144,613	XX	158,518
Manufactured		XX	150,860	XX	161,433
Asbestos (includes reexports):					
Manufactured		XX	120,328	XX	116,015
Unmanufactured	metric tons	27,965	7,964	25,636	7,424
Barite: Natural barium sulfate	do.	9,227	1,675	43,296	3,304
Boron:					
Boric acid	thousand metric tons	39	31,679	47	35,457
Sodium borates	do.	585	208,433	554	205,722
Bromine:					
Compounds (contained bromine)	thousand kilograms	14,443	18,166	14,555	21,280
Elemental	do.	2,932	4,008	2,563	7,665
Calcium chloride	metric tons	23,300	6,591	30,568	8,030
Cement: Hydraulic and clinker	thousand short tons	554	38,306	697	45,773
Clays and clay products	thousand metric tons	4,123	584,404	3,997	590,174
Diatomite	do.	144	42,329	152	45,187
Feldspar	do.	24,795	2,167	8,425	1,334
Fluorspar	do.	14,921	1,891	73,943	16,424
Gemstones (includes reexports):					
Diamonds (excludes industrial diamond)	thousand carats	1,215,420	1,432,600	1,839,583	1,382,700
Graphite:					
Artificial (includes artificial, and colloidal or semicolloidal)[3]	metric tons	33,085	31,625	37,662	29,876
Natural (amorphous, crystalline flake, lump or chip, and natural n.e.c.)	do.	11,537	9,481	19,374	11,345
Gypsum:					
Boards	thousand short tons	69	30,959	105	36,943
Crude	do.	129	5,056	74	3,720
Plasters	do.	94	18,381	96	19,872
Other	do.	XX	30,056	XX	25,077
Helium (Grade-A)	million cubic meters	25	33,450	27	36,504
Iodine:					
Crude	thousand kilograms	NA	NA	1,358	15,784
Potassium iodide	do.	NA	NA	105	398

See footnotes at end of table.

TABLE 8—Continued

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS—Continued					
Iron oxide pigments:					
Pigment grade	metric tons	9,535	$18,694	20,606	$33,816
Other grade	do.	199,470	111,081	164,084	109,463
Lime	short tons	44,287	4,755	41,975	4,659
Lithium compounds:					
Lithium carbonate	kilograms	9,312,903	30,160	9,564,674	31,273
Lithium hydroxide	do.	3,147,248	12,953	3,078,922	12,998
Lithium metal	do.	111,737	NA	57,373	NA
Magnesium:					
Calcined dolomite	metric tons	10,379	2,213	16,702	3,349
Caustic-calcined magnesia	do.	2,313	1,406	3,640	2,289
Compounds (chlorides, hydroxide and peroxide, and sulfates)	do.	14,162	14,165	8,913	8,022
Dead-burned and fused magnesia	do.	58,610	19,709	66,292	25,038
Magnesite (crude)	do.	8,009	8,060	7,961	5,567
Other magnesia	do.	37,747	16,108	25,149	13,985
Mica:					
Scrap and flake:					
Powder	do.	4,319	2,050	3,420	1,717
Waste	do.	580	646	874	331
Sheet:					
Unworked	do.	148	272	205	309
Worked	do.	612	7,568	411	7,454
Nitrogen compounds (major):					
Anhydrous ammonia	thousand short tons	522	NA	603	NA
Fertilizer materials	do.	13,032	NA	15,177	NA
Industrial chemicals	do.	89	126,658	149	110,131
Perlite (crude)	short tons	°35,000	°956	°32,000	°852
Phosphorus:					
Diammonium and monoammonium phosphates	thousand metric tons	8,493	1,414,219	10,505	1,847,926
Elemental phosphorous	metric tons	17,916	29,620	17,018	30,421
Phosphate rock:					
Ground	thousand metric tons	1,084	38,695	219	13,078
Unground	do.	5,875	215,409	5,530	246,755
Phosphoric acid	do.	555	95,881	440	76,342
Superphosphates	do.	747	100,630	946	125,989
Potash:					
Potassium chloride, all grades	metric tons	445,800	46,500	730,600	NA
Potassium sulfate	do.	243,700	43,300	203,300	NA
Potassium magnesium sulfate	do.	318,200	41,400	306,400	NA
Potassium nitrate	do.	7,841	5,000	15,910	NA
Pumice and pumicite	thousand metric tons	20	483	13	290
Quartz crystal:					
Cultured	thousand kilograms	39	1,745	53	2,620
Natural	do.	NA	NA	NA	NA
Salt	thousand short tons	2,498	32,944	1,959	29,875

See footnotes at end of table.

TABLE 8—Continued

U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS—Continued					
Sand and gravel:					
Construction:					
Gravel	thousand short tons	NA	NA	700	$6,043
Sand	do.	468	$11,880	439	1,301
Industrial	do.	1,155	83,826	1,637	106,606
Sodium compounds:					
Soda ash	thousand metric tons	2,392	346,693	2,734	409,088
Sodium sulfate	do.	62	6,704	103	11,495
Stone:					
Crushed	thousand short tons	5,100	41,400	2,415	33,003
Dimension		NA	54,019	NA	64,947
Strontium compounds (precipitated carbonate, oxide, hydroxide, and peroxide)	kilograms	2,882,105	2,298	1,800,221	1,765
Sulfur:					
Elemental	thousand metric tons	972	109,327	1,196	119,713
Sulfuric acid (100% H_2SO_4)	metric tons	161,509	11,515	148,872	11,806
Talc (excludes talcum in packages, face, and compact)	thousand metric tons	238	32,909	178	30,050
Vermiculite	thousand short tons	20	NA	11	NA
Total industrial minerals[1]		XX	6,099,000	XX	6,526,000
Total[1]		XX	28,025,000	XX	29,481,000

[r]Estimated. [r]Revised. NA Not available. XX Not applicable.

[1]Data may not add to totals shown because of rounding.

[2]Artificial graphite includes large amounts of materials made from petroleum coke.

TABLE 9

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS					
Aluminum:					
Aluminum oxide (alumina)	thousand metric tons	4,069	$1,268,973	4,592	$1,102,008
Crude and semicrude	metric tons	1,514,147	2,699,773	1,489,600	2,268,296
Manufactures	do.	1,559,503	2,854,340	1,532,886	2,411,269
Antimony:					
Metal	do.	13,940	23,380	13,502	23,841
Ore and concentrate (antimony content)	do.	3,454	4,835	3,381	5,250
Oxides (antimony content)	do.	12,012	19,574	11,950	18,941
Arsenic:					
Acid	do.	21	31	374	427
Metal	do.	796	4,091	1,008	2,899
Sulfides	do.	—	—	(1)	31
Trioxide	do.	26,256	12,570	27,142	14,320
Bauxite:					
Calcined	thousand metric tons	558	37,205	376	25,198
Crude and dried	do.	12,142	NA	11,793	NA
Beryllium:					
Beryl	metric tons	342	418	288	394
Metal and compounds	kilograms	111,185	1,031	118,343	822
Bismuth metals and alloys	do.	1,611,862	11,747	1,411,394	7,876
Cadmium metal	metric tons	1,741	11,904	2,039	7,928
Chromium:					
Chemicals	do.	10,130	24,136	11,987	10,875
Chromite	do.	305,506	22,150	212,139	14,963
Metals and alloys	do.	426,358	292,216	411,602	278,897
Pigments and preparations based chromium	do.	5,652	13,708	4,939	13,453
Cobalt:					
Metal (unwrought, unwrought alloys, waste and scrap, mattes and other intermediate metallurgy products)	do.	6,342	111,106	6,844	165,227
Metal (wrought and cobalt articles)	do.	48	3,729	105	5,503
Oxide and hydroxides	do.	488	8,539	583	12,941
Other forms (sulfates, chlorides, carbonates and acetates)	do.	547	3,227	448	3,482
Columbium:					
Ferrocolumbium	thousand kilograms	2,919	24,685	3,282	27,415
Ores and concentrates	do.	2,251	7,898	2,515	8,445
Oxide	do.	973	15,348	603	10,210
Unwrought (alloys, metals, and powders)	do.	2	149	1	103
Copper:					
Scrap (alloy and unalloyed)	metric tons	134,614	273,753	125,928	216,305
Semimanufactures [bare wire (includes wire rod), bars, cable (stranded), foil, hydroxides, oxides, pipes, plates, tubing, sheets, and wire (stranded)]	do.	87,562	361,477	69,467	294,825

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Copper—Continued:					
Unmanufactures (anode, ash, blister, concentrates, matte, ore, precipitates, refined, and scrap [unalloyed], copper content)	metric tons	441,308	$1,030,828	442,027	$962,387
Gallium	kilograms	9,894	3,250	11,271	3,829
Germanium materials	do.	49,789	27,971	26,834	11,999
Gold:					
Bullion (refined)	do.	64,755	795,007	147,491	1,721,576
Doré and precipitates	do.	4,245	50,635	5,597	66,735
Ore and concentrates	do.	5,346	8,355	992	10,874
Wastes and scrap	do.	23,173	206,975	24,668	126,264
Hafnium (unwrought waste and scrap)	metric tons	9	1,662	3	489
Indium (unwrought waste and scrap)	kilograms	30,158	6,555	36,288	7,867
Iron ore:					
Ore and agglomerates	thousand metric tons	18,054	559,525	13,335	436,777
Pellets	do.	9,875	355,470	9,317	338,493
Iron and steel:					
Cast iron and steel products	do.	215	212,769	187	195,644
Direct-reduced iron	do.	385	87,469	423	97,897
Fabricated steel products	do.	2,016	3,054,601	1,709	2,705,856
Ferroalloys not elsewhere listed:					
Ferrophosphorus	metric tons	237	526	6,713	1,835
Ferrotitanium and ferrosilicon-titanium	do.	1,960	9,202	1,166	3,819
Ferrozirconium	do.	—	—	288	483
Ferroalloys (n.e.c.)	do.	2,404	8,351	16,485	24,749
Pig iron	thousand metric tons	347	60,069	434	75,261
Steel mill products	do.	15,575	8,344,593	14,280	9,060,231
Iron and steel scrap (includes used rail for rerolling and other uses)	do.	1,464	196,658	1,166	158,725
Lead:					
Base bullion (lead content)	metric tons	2,713	1,636	419	283
Miscellaneous products (lead content)	do.	515	6,782	1,154	4,133
Ore and concentrates (lead content)	do.	10,668	5,167	12,437	4,466
Pigments and compounds	do.	23,082	33,110	23,946	29,967
Pigs and bars (lead content)	do.	90,638	74,395	116,473	69,351
Reclaimed scrap (includes ash and residues, lead content) dues, lead content)	do.	281	102	117	28
Wrought (all forms, including wire and powders, gross weight)	do.	6,723	9,944	5,792	8,460
Magnesium:					
Waste and scrap	do.	4,075	8,137	4,150	4,653
Metal	do.	16,139	47,025	21,758	52,186
Alloys (magnesium content)	do.	5,344	20,726	4,596	15,903
Powders, sheets, tubing, ribbons, wire, and other forms (magnesium content)	do.	1,197	4,420	1,359	4,866

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
		METALS—Continued			
Manganese:					
Chemicals (manganese dioxide and potassium permanganate)	short tons	9,806	$12,453	23,138	$30,724
Metal	do.	14,279	19,741	17,407	24,509
Ore and concentrates (manganese content)	do.	328,360	80,108	258,504	80,664
Ferromanganese (all grades, manganese content)	do.	656,704	468,658	552,198	378,324
Silicomanganese (manganese content)	do.	163,075	117,847	187,155	130,677
Mercury (metal, mercury-bearing waste and scrap)	metric tons	15	231	56	301
Molybdenum (molybdenum content):					
Ferromolybdenum	do.	871	6,990	953	7,304
Ore and concentrates	do.	478	3,184	161	882
Oxides and hydroxides (gross weight)	do.	643	3,569	948	5,013
Molybdates (all)	do.	63	627	77	772
Powder	do.	71	1,771	28	821
Unwrought	do.	39	2,147	45	1,596
Wire (gross weight)	do.	3	249	2	211
Wrought (gross weight)	do.	61	4,217	53	3,275
Other (inorganic compounds, orange, waste and scrap, and other, gross weight)	do.	1,133	5,268	1,186	6,237
Nickel (nickel content):					
Unwrought					
Primary [briquets, cathodes, chemicals (catalysts and salts), ferronickel, flakes, oxide sinter, pellets, powder, and shot]	do.	131,116	1,177,634	132,445	1,123,536
Secondary (stainless steel scrap and waste and scrap)	do.	142,749	1,255,682	138,657	1,182,174
Wrought (bars, foil, pipes, profiles, rods, sheets, strips, tubes, and wire)	do.	1,035	15,495	1,131	16,880
Platinum-group metals (iridium, osmium, palladium, platinum, rhodium, ruthenium, ores, and waste and scrap)	kilograms	125,354	1,905,830	125,661	1,742,866
Rare-earth metals (rare-earth oxide content):					
Cerium compounds (includes chlorides, hydroxides, nitrates, oxides, oxilate, and sulfates)	do.	359,230	2,040	544,962	4,913
Compounds (includes hydroxides, nitrates, oxides, and others, except chlorides)	do.	4,989,646	37,325	3,693,163	34,079
Chloride mixtures (except cerium chloride)	do.	1,362,951	12,813	3,377,242	8,890
Ferrocerium and other pyrophoric alloys	do.	93,130	1,495	92,997	1,424,071
Monazite	metric tons	440	686	—	—
Oxide mixtures (except cerium oxides)	kilograms	150,728	8,018	892,277	13,138
Rare-earth metals (whether intermixed or alloyed)	do.	198,840	3,050	225,820	3,329
Rhenium:					
Ammonium perrhenate	do.	3,002	2,127	3,513	2,815
Metal	do.	5,888	6,864	10,847	13,316

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Selenium:					
Selenium dioxide (selenium content)	kilograms	5,108	$67	14,439	$208
Unwrought and waste and scrap (selenium content)	do.	377,785	8,286	333,289	7,815
Silicon:					
Ferrosilicon	metric tons	238,983	134,993	183,214	93,455
Metal	do.	66,383	114,385	43,386	100,373
Silver:					
Bullion (refined)	kilograms	2,697,926	437,380	2,525,133	338,514
Doré and precipitates	do.	48,449	8,741	151,836	25,740
Ore and concentrates	do.	90,202	23,203	21,422	3,659
Waste and scrap	do.	507,649	86,421	1,452,501	153,299
Tantalum:					
Ores and concentrates (includes synthetic)	thousand kilograms	1,067	27,053	1,000	20,609
Unwrought (alloys, metal, powders, and waste and scrap)	do.	96	9,761	137	11,462
Wrought	do.	3	1,028	2	765
Tellurium (unwrought and waste and scrap)	kilograms	34,012	3,928	29,255	3,073
Thallium (unwrought waste and scrap)	do.	450	61	1,013	184
Thorium:					
Compounds	do.	18,598	595	42,609	1,270
Ore and concentrate	metric tons	800	686	—	—
Ore metal (excludes monazite)	kilograms	188,624	33	205,100	31
Tin:					
Compounds	metric tons	426	2,493	245	1,906
Concentrates (tin content)	do.	—	—	1	6
Dross, skimmings, residues, scrap, tin alloys, n.s.p.f.	do.	6,788	35,291	5,855	33,132
Metal (unwrought)	do.	33,810	215,863	29,102	161,725
Tinfoil, powder, flitters, metallics and manufactures, n.s.p.f.	do.	XX	2,086	XX	1,867
Tinplate and terneplate	do.	293,426	199,036	276,326	195,659
Tinplate scrap	do.	8,488	1,782	10,109	2,240
Titanium:					
Concentrates:					
Ilmenite	do.	345,907	22,962	213,886	24,071
Rutile, natural and synthetic	do.	274,605	127,664	127,664	127,664
Titaniferous iron ore	do.	2,818	2,169	27,012	1,593
Titanium slag	do.	373,623	89,450	408,302	105,792
Metal:					
Ingots and billets	do.	162	47	24	1,095
Powder	do.	20	526	34	697
Unwrought	do.	1,093	10,398	612	5,451

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
METALS—Continued					
Titanium—Continued:					
Metal—Continued:					
Waste and scrap	metric tons	3,037	$17,550	2,666	$8,503
Wrought bars, castings, foil, pipes, plates, profiles, rods, sheet, strip, tubes, wire, and other)	do.	1,266	35,746	914	24,014
Other (includes bars, blooms, sheet, slabs, and other unwrought)	do.	193	2,359	141	1,561
Pigments (dioxides and oxides)	do.	147,592	279,602	166,094	285,290
Tungsten (tungsten content):					
Ammonium tungstate	do.	462	3,463	842	6,756
Ferrotungsten	do.	493	2,739	525	3,128
Miscellaneous tungsten-bearing materials (carbide, chlorides, oxides, metal-bearing materials, tungstates, unwrought, waste and scrap, and wrought)	do.	2,620	46,307	6,246	71,114
Ore and concentrates	do.	6,420	31,301	7,837	43,269
Vanadium:					
Ferrovanadium (vanadium content)	kilograms	244,250	3,720	419,573	5,367
Pentoxide (anhydride, vanadium content)	do.	82,627	719	132,904	943
Vanadium-bearing materials [ash and residues, slag, other (includes spent catalyst), pentoxide content]	do.	6,866,041	12,657	2,063,523	5,187
Zinc:					
Blocks, pigs, slabs	metric tons	631,742	991,562	549,137	619,880
Dross, ashes, and fume (zinc content)	do.	6,411	5,942	6,483	4,658
Dust, powder, flakes	do.	8,834	17,724	15,424	26,169
Ore and concentrates (zinc content)	do.	46,684	17,970	45,419	22,110
Sheets, plates, strips, and other forms	do.	929	1,641	539	877
Waste and scrap	do.	31,720	15,101	31,596	14,185
Oxide	do.	49,454	71,998	38,215	43,712
Compounds	do.	11,653	11,451	9,891	9,553
Other (anodes, manufactures, and unwrought alloys)	do.	XX	7,772	XX	22,765
Zirconium:					
Ore and concentrates	do.	26,783	12,407	35,706	13,772
Unwrought waste and scrap	do.	128	880	197	1,347
Totals[2]		XX	31,657,000	XX	32,068,000
INDUSTRIAL MINERALS					
Abrasive materials (natural and artifical)		XX	512,766	XX	480,880
Asbestos fibers	metric tons	41,348	10,772	34,765	8,900
Barite:					
Barium chemicals	do.	28,429	22,165	29,382	22,551
Crude and ground	do.	1,044	46,300	887,205	41,304
Witherite	do.	34	23	18	8
Boron (contained boric oxide):					
Boric acid	thousand metric tons	6	3,921	5	3,784

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS—Continued					
Boron (contained boric oxide)—Continued:					
Colemanite	thousand metric tons	12	$3,310	18	$4,389
Ulexite	do.	29	7,360	16	4,060
Bromine:					
Compounds	thousand kilograms	20,359	64,512	15,880	71,322
Elemental	do.	756	508	146	199
Calcium:					
Metal	kilograms	651,000	3,779	821,457	5,238
Chloride (crude)	metric tons	145,534	21,541	124,094	18,610
Other compounds	do.	57,286	44,871	84,119	45,031
Cement: Hydraulic and clinker	thousand short tons	13,273	533,047	8,701	402,578
Clays and clay products	thousand metric tons	30	11,988	35	13,249
Diatomite	metric tons	625	294	436	162
Feldspar	do.	11,318	723	17,876	1,124
Fluorspar:					
Aluminum fluoride	do.	35,604	40,295	33,326	33,424
Cryolite	do.	7,306	6,775	3,359	3,448
Fluorspar	do.	513,921	65,938	371,407	49,435
Hydrofluoric acid	do.	101,792	109,384	82,370	89,067
Gemstones:					
Coral and similar materials (unworked)	thousand carats	2,792	7,504	2,556	6,746
Diamond	do.	7,528	3,955,222	8,482	3,992,023
Emeralds (cut but unset)	do.	3,720	162,375	3,939	165,508
Pearls (natural, cultured, and imitation)		NA	26,645	NA	23,737
Rubies and sapphires (cut but unset)	thousand carats	5,817	180,375	5,880	152,475
Other precious or semiprecious stones		NA	271,266	NA	294,168
Graphite:					
Natural (amorphous, crystalline flake, lump or chip, and natural n.e.c.)	metric tons	50,213	35,222	33,544	21,662
Electrodes (electric furnace)	do.	38,317	63,499	26,871	45,635
Gypsum:					
Crude	thousand short tons	8,726	61,009	7,633	52,070
Plasters	do.	1	236	11	258
Boards	do.	272	22,786	88	7,842
Other	do.	XX	26,174	XX	27,971
Iodine:					
Crude	thousand kilograms	3,139	43,256	3,503	35,594
Potassium iodide	do.	29	297	52	502
Iron oxide pigments:					
Natural	metric tons	1,956	1,359	3,288	1,624
Synthetic	do.	32,141	35,918	31,437	37,736
Kyanite (andalucite)	do.	17,700	2,942	5,140	933
Lime:					
Hydrated	short tons	29,920	2,147	26,588	1,977
Other lime	do.	143,277	8,245	147,339	9,091

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS—Continued					
Lithium:					
Carbonate	kilograms	4,196,834	$8,381	3,109,83	$7,414
Hydroxide	do.	471	20	20,375	128
Magnesium compounds:					
Calcined dolomite	metric tons	38,441	3,639	27,852	3,370
Caustic-calcined magnesia	do.	83,885	13,957	107,848	15,891
Compounds (chlorides, hydroxide and peroxide, and sulfates)	do.	33,046	9,238	34,384	9,921
Dead-burned and fused magnesia	do.	155,010	32,858	146,530	30,209
Magnesite (crude)	do.	1,957	722	1,956	712
Other magnesia	do.	5,037	8,573	4,109	7,712
Mica:					
Scrap and flake:					
Powder	do.	9,142	5,133	9,725	5,219
Waste	do.	4,034	987	3,630	996
Sheet:					
Unworked	do.	1,615	2,051	1,422	1,608
Worked	do.	1,085	7,431	918	6,835
Nepheline syenite (crushed and ground)	do.	276,000	12,200	289,000	13,069
Nitrogen compounds:					
Anhydrous ammonia	thousand short tons	1,821	178,951	2,184	232,894
Fertilizer materials	do.	7,719	847,304	7,159	822,102
Industrial chemicals	do.	71	65,852	64	59,444
Peat moss (poultry and fertilizer grade)	short tons	598,802	87,533	631,845	96,132
Perlite (crude)	do.	°65,000	°1,775	°60,000	°1,597
Phosphate rock and phosphate materials	thousand metric tons	477	46,365	574	50,620
Potash:					
Potassium chloride	metric tons	6,816,000	520,000	7,348,700	528,500
Potassium nitrate	do.	36,100	10,100	22,300	6,000
Potassium sulfate	do.	51,900	9,500	57,000	10,100
Potassium sodium nitrate mixtures	do.	47,800	5,500	39,000	5,000
Pumice:					
Crude or unmanufactured	do.	266,604	7,858	86,423	10,047
Wholly or partially manufactured	do.	13,704	2,021	2,850	1,382
Quartz crystal (lacas)	thousand kilograms	NA	NA	NA	NA
Salt	thousand short tons	6,580	88,419	6,821	87,380
Sand and gravel:					
Construction	do.	1,742	22,912	1,465	16,638
Industrial	do.	73	3,148	91	932
Sodium compounds:					
Soda ash	metric tons	145,534	20,495	134,312	21,299
Sodium sulfate	do.	161,665	13,155	156,900	13,807
Stone:					
Crushed (chips and fines)	thousand short tons	4,972	35,310	5,728	38,649
Dimension		NA	567,019	NA	462,778

See footnotes at end of table.

TABLE 9—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS

Mineral		1990[r]		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)
INDUSTRIAL MINERALS—Continued					
Strontium:					
Celestite (strontium sulfate)	metric tons	48,724	$4,189	33,204	$2,577
Compounds (carbonate and nitrate)	kilograms	20,162,343	12,982	16,629,319	10,803
Sulfur:					
Elemental	thousand metric tons	2,571	206,450	3,020	241,749
Sulfuric acid (100% H_2SO_4)	metric tons	1,689,618	62,581	1,845,255	57,727
Talc (unmanufactured)	do.	65,099	11,056	66,791	11,925
Vermiculite	thousand short tons	50	NA	42	NA
Total industrial minerals[2]		XX	9,352,000	XX	9,069,000
Total[2]		XX	41,009,000	XX	41,137,000

[r]Estimated. [r]Revised. NA Not available. XX Not applicable.

[1]Less than 1/2 unit.

[2]Data may not add to totals shown because of rounding.

TABLE 10

COMPARISON OF WORLD AND U.S. PRODUCTION OF SELECTED NONFUEL MINERAL COMMODITIES

Mineral		1990			1991		
		World production[1]	U.S. production	U.S. percent of world production	World production[1]	U.S. production	U.S. percent of world production
METALS, MINE BASIS							
Antimony[2]	metric tons	r66,846	W	NA	64,730	W	NA
Arsenic trioxide[3]	do.	r53,976	—	—	47,084	—	—
Bauxite[4]	thousand metric tons	r109,601	W	NA	109,172	W	NA
Beryllium concentrates (gross weight)	metric tons	r7,119	5 4,548	64	6,607	5 4,339	66
Bismuth	do.	r3,359	W	NA	3,301	W	NA
Chromite (gross weight)	thousand metric tons	r12,848	—	—	13,237	—	—
Cobalt[2]	metric tons	r35,709	—	—	26,583	—	—
Columbium-tantalum concentrate (gross weight)	do.	r32,103	—	—	33,593	—	—
Copper[2]	thousand metric tons	r8,693	r1,588	18	8,820	1,631	18
Gold[2]	kilograms	r2,127,398	r294,527	14	2,111,522	289,885	14
Iron ore (gross weight)	thousand metric tons	r928,427	56,408	6	897,929	55,516	6
Lead[2]	do.	r3,390	r496	15	3,318	477	14
Manganese ore (gross weight)	thousand short tons	r28,036	—	—	24,666	—	—
Mercury	metric tons	r5,061	W	NA	4,536	W	NA
Molybdenum[2]	do.	r122,232	61,611	r50	112,224	53,364	48
Nickel[2]	thousand metric tons	r937	(5 6)	(6)	923	(5 6)	1
Platinum-group metals[3]	kilograms	r288,502	e7,740	3	291,678	e7,780	3
Silver[2]	metric tons	r15,122	r2,125	14	14,723	1,848	13
Tin[2]	do.	r218,518	W	NA	196,695	W	NA
Titanium concentrates (gross weight):							
Ilmenite	thousand metric tons	r3,952	W	NA	3,486	W	NA
Rutile	do.	r475	W	NA	450	W	NA
Tungsten[2]	metric tons	r51,918	W	NA	42,960	W	NA
Vanadium[2]	do.	r30,606	W	NA	26,435	W	NA
Zinc[2]	thousand metric tons	r7,320	543	7	7,282	547	8
METALS, SMELTER BASIS							
Aluminum (primary)	do.	r17,977	4,048	23	18,194	4,121	23
Cadmium	metric tons	r20,493	1,678	8	20,673	1,676	8
Cobalt	do.	r25,316	—	—	23,922	—	—
Copper (primary and secondary)[7]	thousand metric tons	r9,087	1,463	16	9,052	1,487	16
Iron, pig	do.	r550,973	r50,028	9	528,485	44,533	8
Lead, refined (primary and secondary)[8]	do.	r5,830	r1,326	r23	5,642	1,229	22
Magnesium (primary)	metric tons	r353,512	139,333	r39	339,269	131,288	39
Nickel[9]	do.	r883,015	3,701	(6)	875,636	7,065	1
Selenium[10]	kilograms	r1,793,633	286,755	16	1,808,551	259,522	14
Steel, raw	thousand metric tons	r770,638	89,726	12	733,673	79,738	11
Tellurium[10]	kilograms	r70,543	W	NA	78,797	W	NA
Tin[11] (primary and secondary)	metric tons	r240,887	W	NA	220,364	W	NA
Zinc (primary and secondary)	thousand metric tons	r7,053	358	5	7,082	377	5
INDUSTRIAL MINERALS							
Asbestos	do.	r3,819	W	NA	3,490	W	NA
Barite	do.	r5,595	12 439	8	5,271	12 448	8
Boron minerals	do.	r2,966	12 1,094	r37	2,988	12 1,240	41
Bromine	metric tons	r416,900	12 177,000	r42	401,200	12 170,000	42
Cement, hydraulic	thousand short tons	r1,270,970	78,606	6	1,312,302	e77,000	6

See footnotes at end of table.

TABLE 10—Continued

COMPARISON OF WORLD AND U.S. PRODUCTION OF SELECTED NONFUEL MINERAL COMMODITIES

Mineral		1990			1991		
		World production[1]	U.S. production	U.S. percent of world production	World production[1]	U.S. production	U.S. percent of world production
INDUSTRIAL MINERALS—Continued							
Clays:							
Bentonite[3]	thousand metric tons	r9,733	[12]3,474	r36	9,264	e [12]3,432	37
Fuller's earth[10]	do.	r3,480	[12]2,307	66	4,012	e [12]2,740	68
Kaolin[3]	do.	r23,673	[12]9,762	r41	24,748	e [12]9,575	39
Diamond, natural	thousand carats	r101,566	—	—	104,386	—	—
Diatomite	thousand metric tons	r1,629	r [12]631	r39	1,556	610	39
Feldspar	do.	r5,269	630	r12	5,167	580	11
Fluorspar	do.	r5,025	e [5]64	1	4,354	e [5]58	1
Graphite, natural	metric tons	r644,379	—	—	628,894	—	—
Gypsum	thousand short tons	r104,584	16,406	r16	103,544	15,456	15
Iodine, crude	metric tons	r16,114	1,973	12	16,159	1,999	12
Lime[13]	thousand short tons	r148,268	[12]17,481	12	146,426	[12]17,303	12
Magnesite, crude	thousand metric tons	r11,117	W	NA	10,944	W	NA
Mica (including scrap and ground)	metric tons	r210,786	108,845	r52	198,347	102,830	52
Nitrogen: N content of ammonia	thousand short tons	r107,561	r13,806	13	103,308	13,991	14
Peat[14]	do.	r196,612	763	([6])	185,389	697	([6])
Perlite	do.	r2,017	[12]639	r32	1,998	[12]567	28
Phosphate rock (gross weight)	thousand metric tons	r154,356	46,343	30	146,859	48,096	33
Potash (K_2O equivalent)	do.	r27,685	1,713	6	25,548	1,749	7
Pumice[10]	do.	r10,739	[12]443	4	10,802	[12]401	4
Salt[13]	thousand short tons	r200,989	[12]40,738	20	202,450	[12]39,620	20
Sand, industrial (silica)	do.	r129,468	[12]28,406	r22	121,715	[12]25,600	21
Sodium compounds, n.e.s. (natural and manufactured):							
Soda ash	thousand metric tons	r32,273	9,156	28	31,344	9,005	29
Sulfate	do.	r4,870	[12]665	r14	4,837	[12]696	14
Strontium[10]	metric tons	r233,527	—	—	240,356	—	—
Sulfur, all forms	thousand metric tons	r58,154	11,560	20	55,592	10,816	19
Talc and pyrophyllite[15]	do.	r9,084	1,267	r14	8,932	1,037	12
Vermiculite[10]	short tons	r638,462	e [12]230,000	36	576,108	[12]185,000	32

eEstimated. rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data.

[1]Those commodities for which U.S. data are withheld to avoid disclosing company proprietary data, the world total excludes U.S. output and the U.S. percent of world production cannot be reported.

[2]Content of ore and concentrate.

[3]World total does not include an estimate for China.

[4]U.S. figures represent dried bauxite equivalent of crude ore; to the extent possible, individual country figures that are included in the world total are also on the dried bauxite eqiuivalent basis, but for some countries available data are insufficient to permit this adjustment.

[5]Shipments.

[6]Less than 1/2 unit.

[7]Primary and secondary blister and anode copper, including electrowon refined copper that is not included as blister or anode.

[8]Includes bullion.

[9]Refined nickel plus nickel content of ferronickel, nickel oxide, and other nickel salts.

[10]World total does not include estimates for output in the U.S.S.R. or China.

[11]Includes tin content of alloys made directly from ore.

[12]Quantity sold or used by producers.

[13]Data for the United States include Puerto Rico.

[14]Data for the United States exclude proprietary amounts of fuel peat.

[15]The figure for the United States for 1991 excludes proprietary pyrophyllite production.

FIGURE 1

A TYPICAL SURVEY FORM

Form 6-1066-M
Fer. (6-91)

A03

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241

IRON ORE (Usable ore)

O.M.B.No. 1032-0006
Approval Expires: 12/31/93

INDIVIDUAL COMPANY DATA-PROPRIETARY

Unless authorization is granted in the section above the signature, the data furnished in this report will be treated in confidence by the Department of the Interior, except that they may be disclosed to Federal defense agencies or to the Congress upon official request for appropriate purposes.

FACSIMILE NUMBER
1-800-543-0661

(Please correct if name or address has changed.)

Public reporting burden for this collection of information is estimated to average 30 MINUTES per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Bureau of Mines, Branch of Statistics and Methods Development, Washington D.C. 20241; and Office of Information and Regulatory Affairs, Office of Management and Budget, Washington D.C. 20503.

Please complete and return this form in the enclosed envelope by the 15th of the month following the report period. Additional forms are available upon request.

In completing this form, reasonable estimates may be used wherever exact figures are not available. Use zero (0) when appropriate. DO NOT REPORT DECIMALS OR FRACTIONS.

"Collection of non-fuel minerals information is authorized by Public Law 96-479 and the Defense Production Act. This information is used to support executive policy decisions pertaining to emergency preparedness and defense and analyses for minerals legislation and industrial trends. The Bureau relies on your voluntary and timely response to assure that its information is complete and accurate."

SECTION 1. Mine or group covered by this report.

Name _____ State _____ County _____

SECTION 2. Stocks, production, and shipments of usable ore for the report month.
Report only ore products as shipped to consumer, such as direct-shipping ore, concentrates, or agglomerates.
Report ores produced in the United States only; do not include imports.

Usable ore (1)	Code	Weight unit Mark (X) one (2)		Physical inventory Adjustment only (3)	Beginning stocks (4)	Production (5)	Shipments (6)	Ending stocks (7)
		Long tons (4)	Metric tons (6)					
Iron ore (Containing less than 5% Mn, natural)....	201							

SECTION 3. Please indicate any mines opened or closed by your company during the month. _____

Remarks:

Name of person to be contacted regarding this report			Tel. area code	No.	Ext.
Address	No.	Street	City	State	Zip

May tabulations be published which could indirectly reveal the data reported above? ☐ (1) Yes ☐ (2) No

Signature	Title	Date

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